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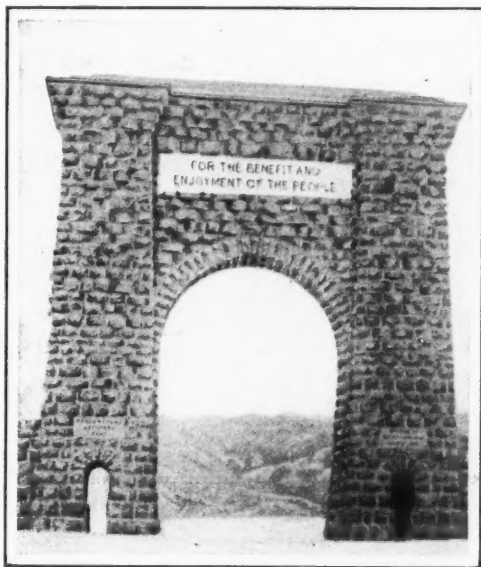
NEW YORK, SEPTEMBER 5, 1906.

No. 10

## PICTURESQUE PARKS PROFITABLE

Tracts Laid Out for Beauty and Recreation Have Enhanced Real Estate Values—Municipalities, States and Nation Interested—History of Movement—Pointers from Landscape Artists—City Reports

By W. P. HEYL



ENTRANCE TO YELLOWSTONE PARK—GARDINER, MONTANA  
(Cornerstone laid in 1903)

**"For the Benefit and Enjoyment of the People"**

OVER the entrance to Yellowstone Park, America's greatest pleasure ground, is to be seen this simple, yet comprehensive statement. With this as the object—the true end and aim of our greatest park, whose benefits are to be enjoyed only by those able to visit them—how much more should each Board of Park Commissioners strive to carry out this same end to secure for the multitudes who are dependent upon City Parks for their share of nature's bounty, some of the same benefits.

From the Master Park Builders' of America, we submit a modern definition of a park, and its uses, as follows:

A considerable tract of land for recreation, enhanced by beauty of appearance. Provision for recreation out-of-doors is of vital importance, especially to children, whose growth to useful members of society is as largely dependent on out-of-door recreation as upon mental training. The need for providing mental training at the expense of the State has long been recognized; the other equally important necessity is rapidly becoming to be.

Parks are no longer considered as mere ornaments to a city. Parks are for the use of the people; "Keep

off the Grass" signs are becoming scarcer. We quote from an authority on the value of parks to the community:

Parks have for so long been considered as being a sort of a living picture and artistic production that we strive to make them such, and we do right in so striving; yet, even before the art, a park is made for use and to fit the needs of the community so they would use it. In this respect it is like the home. The first function of a home is to be usable, inhabitable, homelike and comfortable; we all know what we want our homes to be, and high art is not the first thing we provide for. Art is the crown of our home, and it should crown our parks; but art rests on the useful, and so in our parks there are lots of things that come before what is commonly known as artistic.

### POINTERS ON PARKS

The points to be considered by those who would wisely provide parks for a community are:

1. What proportion of private property should, by law, be kept from being built upon; that is, reserved for the benefit which light and air give to the city as a whole, as well as to themselves as private owners?
2. What should be the width of streets relative to the height of buildings, and what part do the streets play in distributing light and air to the city, and what part do they take in the recreation of the people, or as playgrounds for the children, and how far do they perform the functions known as Park Functions?
3. What part can streets take in providing plant life for city in the form of street trees, grass or flowers, and what influence has plant life on health and happiness and sanity of the people?
4. What is the maximum number of people that should be allowed to live on one acre of the city's territory, and what tenement or other laws should be enacted that will tend to limit them to that number?
5. What are the varying numbers of square feet that the different sections of the city need, per capita, for small parks and playgrounds, and what is the minimum number of square feet a child needs when actually using the playground?

### SUGGESTIONS ON LOCATION

As to the location of parks and playgrounds:

1. What is the maximum distance a child should be expected to walk to its playground, and what are the principles that underlie their location and distribution?
2. What is the maximum distance people should be expected to go to their neighborhood parks, and how should they be located, constructed and cared for, and what should they provide for the people?
3. What is the minimum number of square feet of gravel space, per capita, that should be provided, and what ratio should this gravel space bear to the lawn and planting for scenic effect, and what accommodation should be provided in these places?

After considering these serious questions as to the value of parks to a community, apply to a landscape architect, a scientific park builder. Science, employed in laying out parks, has given rise to the landscape

architect, who is both an engineer and artist. One of the best of these landscape artists has given us two thoughts, which go to prove the desirability of hiring trained men.

An engineer is a man who does something quickly, systematically, scientifically and with the least expense, what anyone else might do in some way if he had time enough, and money enough at his command.

A fitting description of an artist might be, a man who can do all that an engineer does, but in addition to it, he writes into his work an appeal to the heart and soul of man; and wearied man responding to this appeal is refreshed.

#### COST AND VALUE OF PARKS

It is generally admitted that the best parks are bits of nature within cities to soothe tired brains and hearts and wearied nerves, by the quiet restfulness of their beauty.

From this viewpoint it is easily seen that park improvement does not mean a prodigal expenditure of money. In fact reports from Boards of Assessors usually prove that money wisely spent in park improvement is money well invested. The taxable value of land in the neighborhood of parks increases immensely, adding to the municipality's income. From the report of the New York Park Commissioners, we find that Central Park, the first large city park in America, and Prospect Park in Brooklyn, furnish striking examples:

In 1856, the assessed valuation of the three wards adjoining Central Park was \$20,429.65. In 1873, it had increased to \$236,081.515, a gain in seventeen years of \$215,651.950. The natural average increase of the other wards in the city, where all the wards had been averaged, was \$53,000,000, making the earning capacity of the parks for the period \$183,081,515. In Brooklyn, in 1864, when Prospect Park, with its 515 acres of land, was acquired, the assessed valuation of the three neighboring wards was \$19,949,395, and at the end of three years the valuation had risen 38 per cent., or over \$7,000—which, by the way, was twice the cost of the land which had been parked.

W. E. Edgerton, Superintendent of Parks, of Albany, New York, says of the Albany Parks:

The history of Albany is that the value of the ground contiguous to the parks has not only doubled, but quadrupled and sextupled. One piece of property was worth \$8,500, and, by the simple expenditure of \$4,800 on it, the value of that property was raised more than forty times in eight years.

In their eleventh annual report, the Park Commissioners of Boston, in referring to the Back Bay improvements, show an increased valuation in eight years of \$11,935,449, with a total increase of revenue from taxes of \$280,734.

Mr. W. H. Harmon, Secretary of the Chicago Park Department, in a letter to the Secretary of the New York Park Association, says, in reference to the effect of parks upon the value of adjacent land:

The immediate effect was to double and quadruple property.

#### A BUSINESS PROPOSITION

We would not give the impression that cities may be greatly improved without cost—especially if allowed to go long without parks. But this is to a great extent a business proposition, and no business man objects to any cost, provided returns are adequate. We believe in most instances that they will be, and abundantly so, even from a purely pecuniary standpoint; but in much greater measure in the increased health, happiness and comfort of every man, woman and child.

Begin with the most necessary and fundamental improvements. But we would again urge that haphazard work will in the end be most expensive, and that all improvements should be undertaken with a view to an ultimate homogeneous whole, and only after the careful consideration of a definite and comprehensive plan.

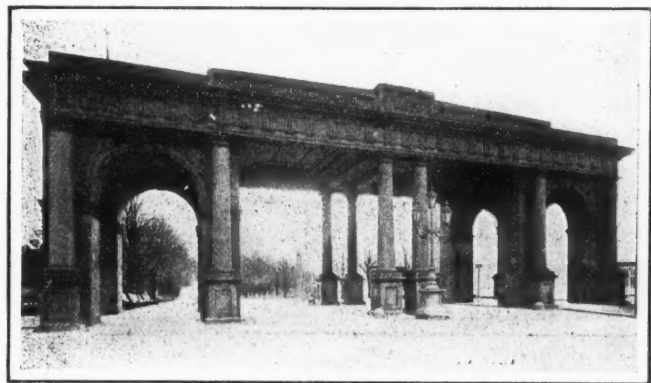


CENTRAL PARK—NEW YORK CITY; CONTAINS 843 ACRES

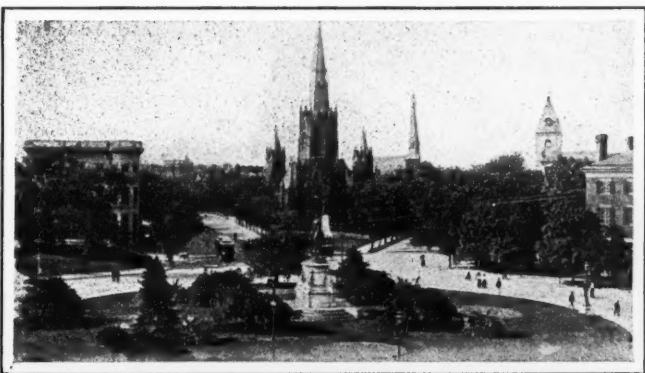




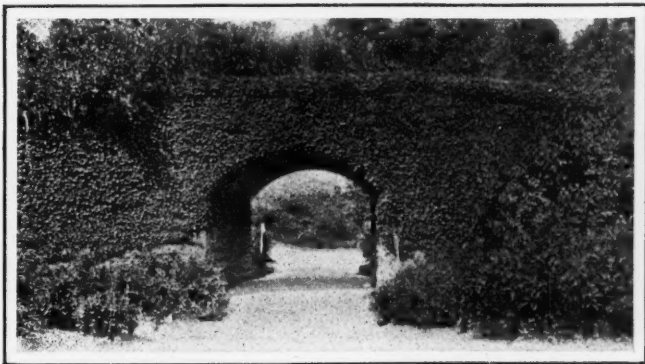
WASHINGTON PARK LAKE—ALBANY, N. Y.



ENTRANCE TO DRUID HILL PARK—BALTIMORE MD.



VIEW OF THOMAS CIRCLE—WASHINGTON, D. C.



IVY ARCH AT THE PARK—BUFFALO, N. Y.

Nor, is the importance of parks confined to the cities. The National Government, by its reservation of thousands of acres, not only provides places for recreation, hunting and fishing, but its chief concern is the preservation and protection of the head waters of streams, and conservation of timber tracts. It is now known that the entire climatic condition, of vast areas, the control of rainfall, the lessening of desert conditions, are all directly influenced by these largest parks.

#### CITY PARKS STAND FOREMOST

Individual States and groups of States have taken legislative action to protect large timber tracts (natural parks) that their water supplies may not be impaired. This movement received the support, not only of the agricultural community who are vitally interested, but of the manufacturers as well, whose water power is endangered. As population is tending more and more to concentrate in cities it is the city parks, and parks surrounding cities, which are receiving the greatest attention at the present time. Of city parks we find the areas vary greatly. One of our best served cities in its list of parks, makes mention of the smallest as being .001 of an acre in extent; the largest within the built-up part of the city is 840 acres. The largest of its suburban parks being 1,132 acres. Boston, Washington, Baltimore and Chicago have surrounding or metropolitan park systems of larger areas.

The interest in city parks, though it has increased wonderfully within the past twenty-five years, is not of recent origin. Washington and Jefferson collaborated in the beautification of our Capital City. It was they who established a precedent of securing the best engineering talent to carry out their ideas. The plans formulated by L'Enfant, at their solicitation, have stood the test of time. So well founded were they, that a Commission composed of the leading landscape architects and artists, recently appointed by the Senate Committee, to draught plans for the improvement of Washington, found, after more than a year's study and travel, that the plans as worked out by L'Enfant were the best basis on which to proceed. This committee, headed by Mr. Daniel H. Burnham, F. L. Olmstead, Charles F. McKim, and Augustus Saint Gaudens, thus affirmed the wisdom and far-sightedness of our first city beautifiers.

#### PARK MOVEMENT IN AMERICA

That the example set so early was, unfortunately, not followed out, is shown by a study of Park Movement in America. With few exceptions, some of which were the reclaiming for park purposes of abandoned cemeteries, very little attention was paid in the United States to laying out of parks until 1850. About this time Andrew Downing wrote a series of letters in "The Horticulturist." These letters, widely read, aroused the action of doers of good in different communities, and from them can be traced the formation of Elm Park in Worcester, Mass.; Bushnell Park, in Hartford, Conn., and Central Park, in New York

City—the first three distinctive municipal parks in the United States. Soon after, land in Philadelphia was taken from the Water Department and dedicated as Fairmont Park. Druid Hill Park, in Baltimore, and Lincoln Park, in Chicago, were also provided for.

During the past ten years park work has been extended to a degree which would have seemed extravagant a quarter of a century ago. At that time, a single park in a city was considered an ornament, to which the city pointed with pride. Now, a series of parks connected by drives, are found to surround many of our largest cities, and where communities are near each other, such surrounding parks form a system, each park enhanced by the other. Essex County, in New Jersey, furnishes an example of a park system, which has grown about Newark as a center, but which serves many cities in the neighborhood. These larger parks have become of greater usefulness and benefit as the means of transportation by trolley has improved, and become less costly. Paterson, in the same State of New Jersey, has a delightful East Side Park.

As park reports continue to affirm the wisdom of money so spent, the movement is still growing. Buffalo, Detroit, Cleveland and Colorado Springs have recently called for reports from landscape artists for the improvement and beautification of their cities. From such a report to the Civic League of Columbia, South Carolina, we have quoted above. There are others too numerous to mention, but the sample presented fairly illustrates the nature of the work. That other municipalities will join in the procession for civic improvement, there is no doubt. And insofar as the cities join in this movement, just so far will they progress in affairs generally. Cities nowadays are judged largely by the appearance they present to the casual visitor, and it is to their interest to aim for the Beautiful, as well as the "Bigger, Better, Busier" city, for which all now seem to be striving.

#### PLAYGROUNDS AND PUBLIC BATHS

The needs of the dwellers of the crowded districts of great cities have received attention. Under the jurisdiction of the Park Commissioners, there have been placed the smallest of parks, known as Recreation Grounds, sections for boys and girls to play, sand piles for children; roof piers where tired mothers may take babies for invigorating air, which is denied in crowded tenements. Nor, is the Park Commissioner's duty confined to land alone. The city baths along the shore are in the care of the Park Department. Children in a half dozen cities are brought in still closer touch with nature through the successful operation of farm schools, small farm gardens are cared for by the children, who are wonderfully proud of the vegetables and flowers they produce.

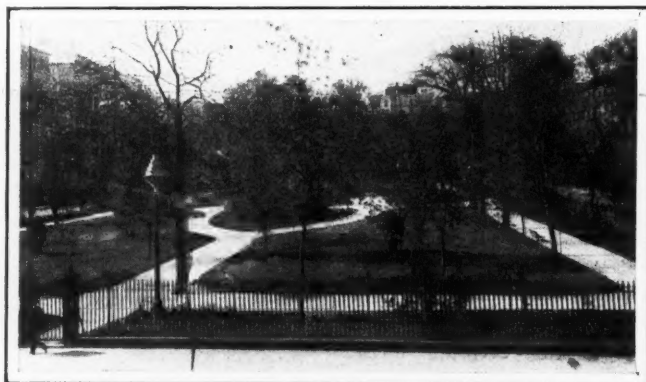
In 1870, the dearth of small parks in the city of New York became so marked that Legislation was enacted to provide parks in the more crowded districts. Under these laws, a half dozen small parks were provided, averaging less than three acres each. Owing to the value the ground had acquired, and the value of the



THE WATERWORKS PARK—DETROIT, MICH



VIEW OF CAPITOL PARK—HARTFORD, CONN.



VIEW OF GRAMERCY PARK—NEW YORK CITY



CENTRAL PARK, NEW YORK CITY—VIEW OF CROWDS AND PLAYGROUND





EAST-SIDE PLAYGROUND—NEW YORK CITY  
(An Afternoon Concert.)

buildings which were appropriated, their cost was enormous as compared to what it would have been if the parks had been laid out years ago. Notwithstanding this immense outlay of money, this work is still going on, because of the great value they are to the community, as shown by the numbers who gather there. Statistics show that during the last three months of last year 1,389,200 people used these small parks.

The accompanying cut shows that they are indeed popular.

Through the courtesy of the Secretary of the Metropolitan Art Association, we reproduce a picture that shows there is still dire need for more playgrounds.

### A BIT OF AMERICAN HISTORY

THE oldest building in Louisiana, the ancient Archbishopric, on Charles street, boasts of one of the handsomest courtyards. The building was erected in 1727, and remains exactly as it was first erected. Visitors will remark the ancient staircase of cypress, worn by the passing of generations. In the courtyard is seen one of the oldest and best preserved specimens of the "Spanish dagger." It dates back, so those who claim to know aver, to the building of the palace, and, indeed, its height and dignity indicate anything but youth.



ARCHBISHOP'S PALACE—NEW ORLEANS, LA.

## CITIES' WORK IN BEAUTIFYING

*Boston, Mass.*—King's Beach has been improved by a sea wall and esplanade from the monument in Swampscott to and around Red Rock in Lynn, and has already proved so satisfactory that a very strong public demand has been made for the extension of the improvement along the intervening strip of shore between Red Rock and the Nahant-Lynn Bath-house. If it is found that it may be provided with available funds, it will not only be attractive in itself, but also add to the attractiveness of the portion already built, and furnish a connection with the Nahant road, which will bring into use a continuous ocean driveway six miles long, and of almost unrivaled beauty and usefulness.—METROPOLITAN PARK COMMISSION, 1906.

*Cambridge, Mass.*—The laying out of new playgrounds in various parts of the city, when suggested by the different branches of the city government, has had our consideration, but they might more readily materialize, if, with the order, came the necessary appropriation for labor and maintenance. Granted, that many small parks and breathing places, constructed and properly cared for throughout the city, would be alike appreciated and beneficial, it must be borne in mind that we must meet the demands that the coming appearance of our river front is sure to present. Particular attention should be given first to the completion of that portion of the park system that is assured of permanent existence.—BOARD OF PARK COMMISSIONERS.

*Lynn, Mass.*—"There are not very many cities in the United States or anywhere else that are more highly favored than Lynn in their wealth of natural attractions, with the magnificent ocean beaches on the one hand and the beautiful Great Woods on the other. There is every opportunity for the enthusiasm of the park promoters to find the fullest scope. Nothing should be put in Lynn Woods that would be incongruous with the wilderness of its beautiful scenery, and I hope that you will be successful in resisting the inevitable demands of the people, who always look upon a reservation of this kind as a convenient place to establish every sort of thing which the cities appear to have no room for elsewhere."—LETTER FROM HENRY A. BAKER, R. I. Metropolitan Park Commissioner, to Lynn Park Commissioner.

*New York City.*—The Commission's collection of books, pamphlets, periodicals, photographs and prints on civic art in Europe and America has been considerably added to and extended during the current year. At this date it contains 275 bound volumes, 101 maps separately mounted and catalogued, several hundred unbound pamphlets, and between 2,300 and 2,400 photographs and prints, relating to about 100 cities—making it one of the best collections upon this subject in the United States. The library has been consulted not only by members of the Commission, city officials, architects, contractors and other citizens interested in city improvement, but to a steadily increasing extent by visitors from other cities as far west as the Pacific coast.—ANNUAL REPORT OF THE ART COMMISSION, for 1905.

*Philadelphia, Pa.*—Art is a native instinct of man's nature; but it has to wait for the time when riches have been accumulated and are pretty widely diffused, before it can flourish and become an integral part of the social and public life of the people. The American people have now reached the position where the possession of the finest works of art is felt to be a necessity, when museums and collections of paintings for the diffusion of taste among the masses are springing into existence in every part of the land; and we are beginning to realize that it is the bounden duty of the State to provide liberally for those elevating influences which art in the widest sense of the term is best calculated to exercise in a community.—DR. MACALISTER, before Fairmount Park Art Association.

*St. Louis, Mo.*—The valley of the River des Peres, commencing at the south line of the park, is susceptible of treatment that would give us a large area for a lake, and which would make it one of the most beautiful parks in the world, and a water feature that would be not only a useful but a beautiful addition. A most necessary combination for a park is water and landscape. This question properly considered would give us a park second to none, with a lake over a mile and a half long studded with islands, and the proper place for aquatic sports. As soon as the question of the River des Peres is settled, the question of a lake will be determined.—ROBERT AULL, PARK COMMISSIONER.

*Wilmington, Del.*—The "Zoo" continues to be the attractive feature of North Brandywine Park, and its popularity is attested both by the crowds who assemble there on Sundays and on holidays, and by the generally distributed financial support it has received from all sections of the city. It has no assured income and the association has to rely wholly upon the efforts of its managers to secure voluntary subscriptions. An effort has been made to place the enterprise upon a sound financial basis. With this in view an appeal was made to private individuals and to city council.—BOARD OF PARK COMMISSIONERS.

## TREE PLANTING IN CITIES

### Actual Value of Work from a Practical Standpoint—Systematic Arrangement Essential—New York City's Regulations and Conditions Elsewhere—Comparative Cost—Benefits Derived

By RICHARD SCHERMERHORN, JR.  
Assoc. M. Am. Soc. C. E., Jun. M. Am. Soc. Landscape Archs.

SOME cities may be said to be noted for their superior architecture, others for their regular and symmetrical arrangement of streets and boulevards, others for the beauty and abundance of their trees. Very few cities are endowed with all three of these attributes, each one of which goes so far to advance not only the welfare of the average citizen, but his personal comfort and enjoyment as well. The architecture of a city is necessarily characteristic of its wealth, the agreeable arrangement of a city's thoroughfares and civic centers depends more or less upon the original conditions and the city's growth, but the possession of a plentiful supply of luxuriant and shapely trees lies more to the efforts of the individual citizens, and if they can be educated to appreciate the benefits of systematic tree planting they can accomplish much toward their mutual satisfaction and enjoyment.

Tree planting in cities is not given the attention that it should have, but there are a great many substantial reasons why this is the case, and the actual practicability of the general planting of trees in most cities can only be gauged by the extent and character of the city itself. If the city is fortunate enough to have had a well-regulated plan for its lay-out in its early settlement, it has generally been provided with a sufficient number of street trees, and if this city grows at a moderate pace, and the locations of its business section and residence section do not change to any great extent, the frequent renewal of this tree planting may be expected. But in the large cities of to-day, where a residence section may be changed to a business section in the course of a few years and citizens are generally only transient occupants of their dwellings, the question of planting trees along the streets is given slight attention. Therefore, tree planting should have organization, which in some cities it has, and the results in these cases are very marked and satisfactory, although there is still room for a greater interest on the part of the people.

#### THE PRACTICAL VIEWPOINT

Looking at the matter from a purely practical standpoint, there are a few other conditions worthy of consideration. In the first place, there is no need to argue that a tree-lined street is much more superior in every respect than a street entirely destitute of vegetation. This is generally accepted to be a fact. It is also true, however, that the average citizen will not consider to any serious extent the planting of trees in front of his property. His reasons are apt to be more or less selfish. In the rush and hurry of affairs he does not realize that he can make his place of residence more attractive; if he does consider this, he will assume that it will take too

long a period of time for a tree to become sufficiently matured to be of any use, and he may not care to invest any money or labor for the benefit of his successors. This latter is apt to be a poor excuse, for if he stops to think of it he is prepared to pay, as a matter of course, a water tax or even a park improvement tax every year, which will probably be little less than the cost of a single tree, and while he pays these taxes yearly, it would hardly be necessary for him to plant a tree more than twice in a lifetime. If all people would consider the subject, the benefit would not be confined to the individual alone, but citizens would profit by others' work as well as their own. Unfortunately, this condition is a difficult one to reach, but it is one very much worth striving for.

It should be interesting to those who can fully appreciate the added attractiveness of a tree-lined street over a barren stretch of pavement to be familiar with the following considerations in regard to tree planting, which may be arranged under separate headings as follows:—

1. Actual value of trees.
2. Their proper planting.
3. Their care.
4. Trees suited for street planting.
5. Their cost.

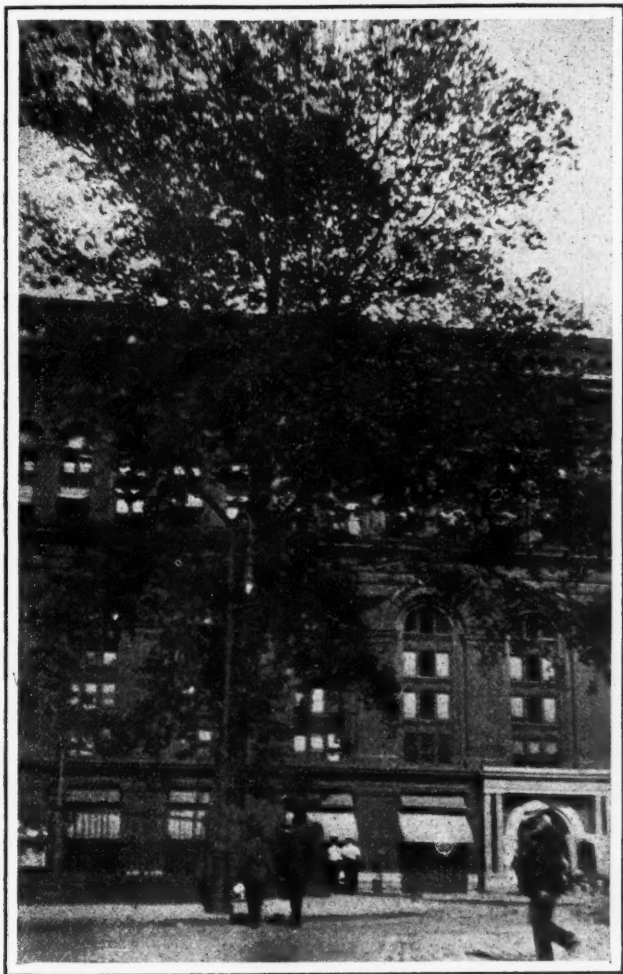
1. *Actual Value.*—It is true that property values along a street lined with well-developed trees are greater than those in sections which are entirely devoid of the latter. Illustration of this may be seen in the fact that almost without exception the suburban real estate improvements of a substantial sort provide for an abundant planting of trees along their streets. From a hygienic standpoint, it is well known that the presence of vegetation provides a purer atmosphere. In the summer the trees will also ward off the hot rays of the sun, while in the winter they will not interfere with them, and at the same time they may act as a limited means of protection against effects of cold winds. They also serve to lessen the circulation of dust and soot. These may be considered among the practical advantages derived from tree planting.

2. *Their Proper Planting.*—The City of New York has issued the following rules and regulations for the planting and care of trees in the streets of the city:—

"1. No shade or ornamental tree or shrub shall be planted in any of the streets, avenues or public thoroughfares of the City of New York until such tree or shrub shall have been first inspected and approved by a duly appointed employee or expert of the Department of Parks and a permit granted therefor.

"2. No hole or excavations shall be prepared for planting any tree or shrub unless sufficient mold of satisfactory





PLANE TREE—BOWLING GREEN, NEW YORK CITY

quality shall be used and a duly appointed employee or expert of the Department of Parks shall report that the conditions, such as the absence of poisonous gas and deleterious substances, have been made satisfactory and a permit granted therefor.

"3. No stem, branch or leaf of any such tree or shrub shall be cut, broken or otherwise disturbed without having been first examined by a duly appointed expert or employee of the Department of Parks and a permit granted therefor.

"4. No root of any such tree or shrub shall be disturbed or interfered with in any way by any individual or any officer or employee of a public or private corporation until the same shall have been examined and a permit issued therefor.

"5. The surface of the ground within three feet of any tree or shrub growing on any street, avenue or other public thoroughfare shall not be cultivated, fertilized, paved or given any treatment whatever except under permit granted after an inspection by a duly appointed employee or expert of the Department of Parks.

"6. It shall not be lawful to attach any guy rope, cable or other contrivance to any tree or shrub or to use the same in connection with any banner, transparency or any business purpose whatever except under a permit from this Department.

"7. It shall not be lawful to cut, deface, mutilate or in

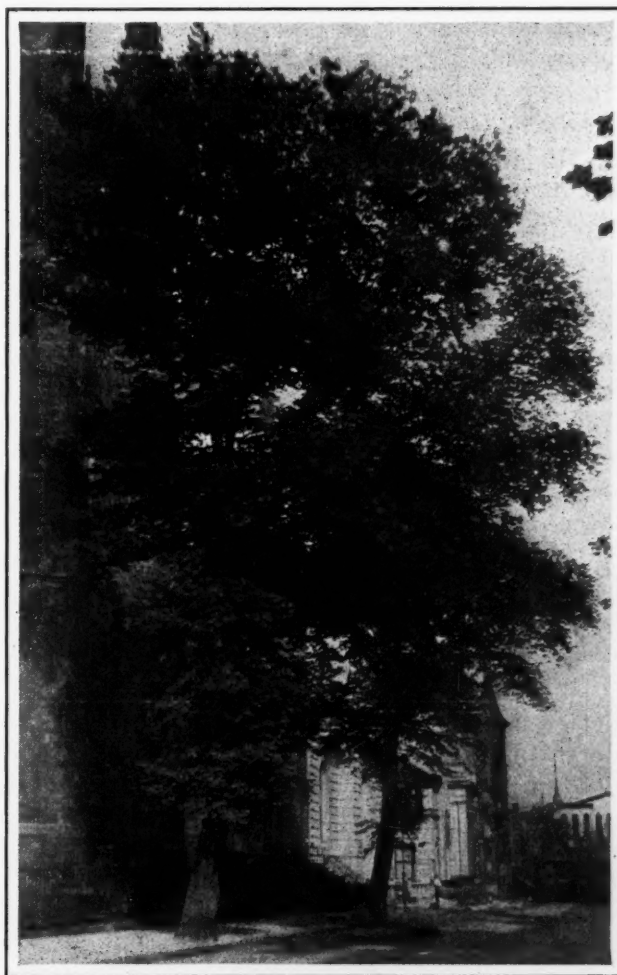
any way misuse any tree or shrub, nor shall any horse or other animal be permitted to stand in a manner or position where it may or shall cut, deface or mutilate any tree or shrub.

"8. The foregoing rules and regulations are also adopted and declared as ordinances. Any person violating the same shall be guilty of a misdemeanor, and shall, on conviction thereof before a City Magistrate, be punished by a fine not exceeding \$50, or in default of payment of such fine, by imprisonment not exceeding 30 days."—(Adopted by Park Board, April 28, 1902.)

These regulations do a great deal toward procuring a proper treatment for all city trees, and although the amount of red tape required may deter many property owners from actually planting trees, still it has the effect of sparing the destruction of a great many of the substantial trees already planted.

It is customary in systematic planting to place a tree before each house, the trees then being actually between 20 and 30 feet apart. This is really about one-half as far apart as trees should ultimately grow, but this fact is lost sight of through the original plan of planting a sufficient number to overcome an occasional loss.

Most trees do poorly in the city because the pavements and sidewalks are so waterproof that an insufficient quantity of moisture is supplied to the roots. Trees should be allowed even more space to grow in than the city requires.



ENGLISH ELM TREES—PIERREPONT STREET, BROOKLYN, N. Y.

It has lately become the custom among property owners to cover the grass plots in front of their houses with flagging or concrete. This takes away a considerable portion of what little moisture the roots are able to obtain, and there are very few trees that will progress beyond a certain point if they have no more opportunity for receiving moisture than the open space at the bottom of their trunks; in fact, a great many trees will die slowly after this stage has been reached. Therefore, if the trees are to be indefinitely maintained on city streets, houses should be planned so that at least a small portion of soil space is left open.

3. *Their Care.*—After the tree has been planted, the next consideration must be its protection, and this is often disregarded. It is absolutely necessary to provide tree guards, particularly to induce regular growth and also to protect the trees from exterior interference. Horses have a particular fancy for green tree bark, and many a fine tree has been ruined from want of proper protection in this respect. Few people realize that this barking of trees is a very serious injury. While a tree may grow in an apparently healthy state after a portion of bark has been eaten off for one-half its circumference, it is only a matter of time when interior decay will set in and the tree will finally die. It would surprise some people to know that it is only necessary to strip a very small portion of the bark around the entire circumference of a tree to kill it immediately.

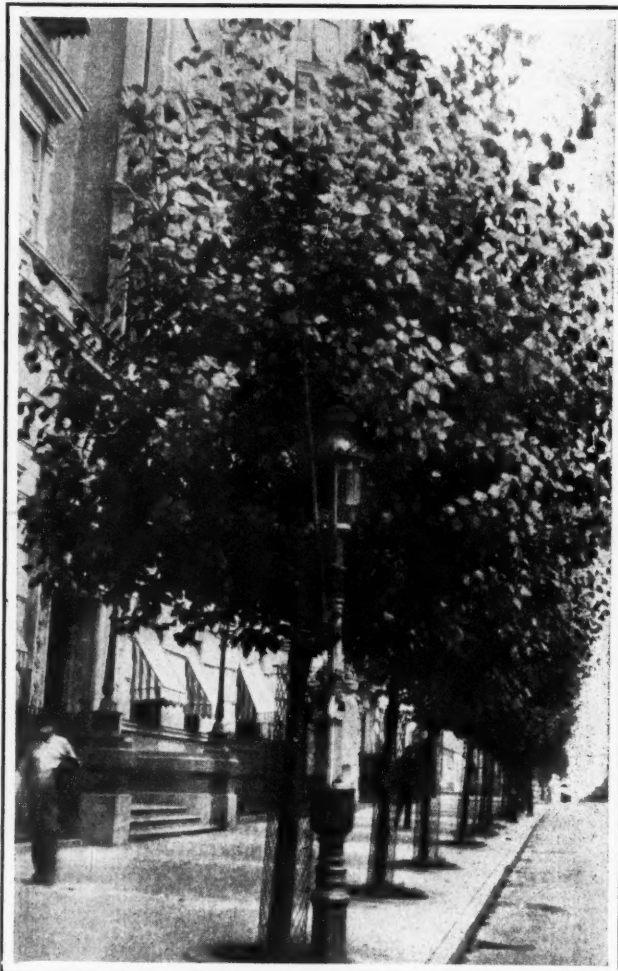
Much might be said further about the ravages of insects in a great many of the trees. While it is impossible for the individual owner to do much to lessen this evil, the ill result can often be minimized by taking precautions early in the season before the pests have begun their work. In cities where the care of trees is under the authority of the Park Department, it may be that certain benefits are gained, but it is impossible without an enormous expense for such a department to accomplish much toward caring for the trees without the assistance of each property owner.

4. *Trees Suited for Street Planting.*—The best trees for street planting in the average city in the Northeastern States may be said to be the following, named in the order of their desirability:—*Norway maple*, *American elm*, *Plane*, *American linden*, *English elm*, *Pin oak*, *Tulip tree*, and *Horse chestnut*. The *Poplar*, *Catalpa* and *Ginkgo* are also planted to a considerable extent, chiefly on account of their rapid growth.

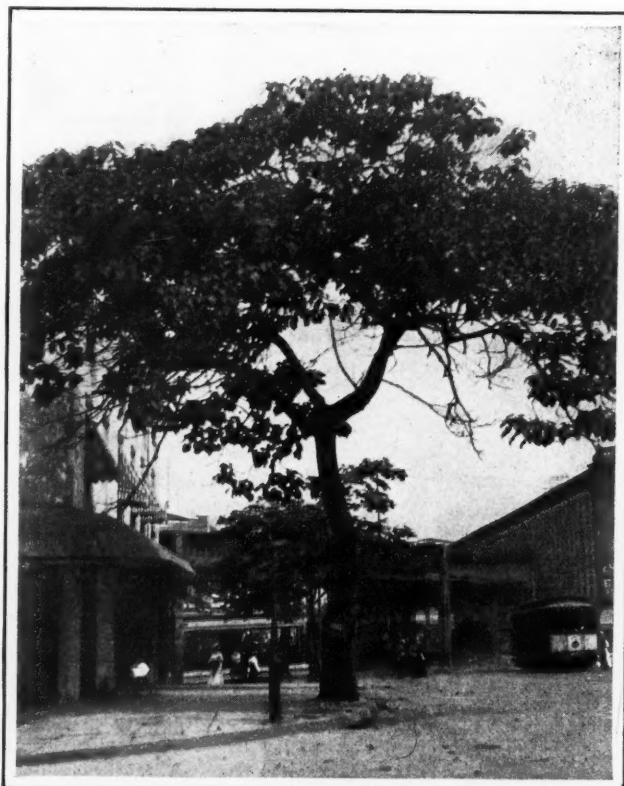
The *Norway maple* is satisfactory on account of its symmetry, its very luxuriant foliage and its general hardiness. It also grows at a fairly rapid rate.

The *American elm* has not a very rapid growth, but it is particularly hardy under almost every condition except the insect pest. The elm-leaf borer is well known, however, and has done so much destruction to these trees that for this reason they are not planted in some localities where they would otherwise be primarily considered.

The *Plane* (Oriental) tree is a very attractive tree for city planting and is very hardy and fairly free from insects. The different colors which its bark assumes dur-



LINE OF CAROLINA POPLARS—CENTRAL PARK WEST, NEW YORK CITY



AN OLD CATALPA—FLATBUSH AVENUE, BROOKLYN, N. Y.



ing certain periods of the year are very picturesque, but the shedding of this bark and the almost continual dropping of leaves is one of the less agreeable features of the tree.

The *American linden* is a quick-growing tree and has luxuriant foliage. It has not much individuality, however, and is subject to diseases. It has clusters of small yellow flowers in the Spring, which are attractive.

The *English elm* is one of the most attractive of trees, differing from the American elm in that there is less drooping and less spreading of branches, and in the texture of its bark. It grows slowly and for this reason is not used more extensively.

The *Pin oak* grows very slowly in the city, although it is used considerably. Owing to the long life of the oaks and their picturesque character, they are desirable.

The *Horse chestnut* is agreeable on account of its dense shade and its attractive blossoms in the Spring. It does not grow to a very great height and is subject to various diseases; the shedding of its leaves is very undesirable.

The *Carolina poplar* is used probably more than any other city tree. It grows very fast and has a certain regularity of form. Its wood is soft, however, and there is nothing particularly interesting in its appearance. It is also very short lived.

The *Catalpa* (*Speciosa*) is a tree of distinct individuality, but cannot be said to be very beautiful. Its leaves are large but few, and a considerable amount of dead wood is generally in evidence. It grows rapidly, and for this reason is used considerably. Its flowers in the Spring are also very attractive. It is one of the last trees to show foliage in the Spring.

The *Ginkgo* is fast-growing and fairly symmetrical, and is particularly free from insects.

The setting of these trees will cost from \$15 to \$25 per hundred in fairly loose soil. In harder soil, the cost would be from \$25 to \$50. The cost of loam must be added to this, which will vary between \$1 and \$2 per cubic yard. Where it is necessary to excavate old stumps, about 50 to 100 per cent. must be added to the cost of

planting. The furnishing and setting of single trees of sizes specified under all these conditions will cost from \$5 to \$15.

5. *Their Cost.*—The following table will show the comparative cost of furnishing the above-mentioned trees:—

	Diam.	Price per Single Tree	Price per 10	Price per 100
Norway Maple:				
Height, 10'-12".....	1½"	.75	7.00	65.00
12'-14".....	2"	1.50	12.50	110.00
American Elm:				
Height, 10'-12".....	1½"	.75	7.00	60.00
12'-14".....	2"	1.50	12.50	100.00
Oriental Plane:				
Height, 10'-12".....	1½"	.75	7.00	60.00
12'-14".....	2"	1.50	12.50	100.00
American Linden:				
Height, 10'-12".....	1½"	.75	7.00	90.00
12'-14".....	2"	1.25	11.00	100.00
English Elm:				
Height, 10'-12".....	1½"	.75	7.00	65.00
12'-14".....	1½"	1.50	12.50	100.00
Pin Oak:				
Height, 10'-12".....	1½"	.75	7.00	60.00
12'-14".....	2"	1.50	12.50	100.00
Horse Chestnut:				
Height, 10'-12".....	2½"	2.00	17.50	150.00
Carolina Poplar:				
Height, 10'-12".....	1½"	.50	4.00	35.00
12'-14".....	2"	1.00	7.50	65.00
Catalpa (Spec.):				
Height, 10'-12".....	1½"	.50	4.50	40.00
12'-14".....	2"	1.00	7.50	65.00
Ginkgo:				
Height, 10'-12".....	1½"	1.00	8.50	75.00

Many cities in the recent past have taken up the matter in a serious, matter-of-fact way, and that there will be a rejuvenation in this direction is the promise made on every hand. Tree planting is desirable for every reason; there are none who will gainsay this. Neither can it be doubted that municipalities are behindhand in this regard. The fault lies with city officials, who in this regard fail to look out for the best interests of the city or its citizens, or perchance to the citizens themselves who fail to appreciate the importance of this branch of work and refuse to countenance the expenditure of a small sum of money for beautification.

## WHAT CAN BE DONE WITH OVERHEAD WIRES



HARRISON AVENUE—BOSTON, MASS.  
(Showing overhead wires)



HARRISON AVENUE—BOSTON, MASS.  
(As it now appears)

## THE ARTISTIC IN MUNICIPAL UTILITIES

### Creation of the City Beautiful and What It Involves—A Civic Centre and Parks Essential—Ornamental Fountains and Statuary—Handsome Designs Sought After

A BEAUTIFUL building can be such only when all of its details are artistic; and the creation of the City Beautiful involves not only a well designed plan, a civic center, a park, and a show boulevard, but also an artistic treatment of its bridges, street signs, lamp posts, fire hydrants, and mail boxes, as well as of its fountains, monuments, statuary, and other confessedly ornamental features. Fifteen years ago almost nothing had been done along this line. The general impression was that most useful structures could not also be beautiful or even artistic; that if a street sign was easily read it served its full purpose; if a bridge was strong enough and economical nothing further need be asked of it. But Burnham's Court of Honor at Chicago, New York's efforts at obtaining artistic street signs, and the prize contest for electroliers conducted by the Municipal Art Society, of New York, were perhaps as much mile posts indicating progress as they were finger posts pointing the way toward the real beautifying of our cities.

Perhaps the most common detail of our city streets is the street sign. These should be of a size proportional to their distance from the ground, which, however, is generally limited to between eight and fifteen feet, the letters being readily distinguishable at a glance; to which end also only the plainest of lettering should be used, the letters being about three inches high for average elevation of signs. Neatness of coloring and proportion is desirable; fancy decoration is generally out of place, although a little scroll work may be used as a bracket connecting the sign to a supporting post. On streets where much of the travel is in the roadway, by trolley or carriage, it is desirable that the name of the cross-street as well as of the street traveled be plainly visible from the vehicle. The signs used in New York are probably the best yet designed to meet this requirement.

#### DESIGNS FOR STREET LIGHTS

Many pleasing designs for electric-light poles are on the market, and there can be little excuse for the use of ugly ones by any municipality. But gas lights, and those using oil, are seldom found in any but the most rigidly utilitarian globes, set upon posts which are not often pleasing, if they are not distinctly displeasing in appearance. Possibly the manufacturers think the day of such lamps is so nearly over that it is useless to waste time in improving them. But it is probable that their use will always continue in outlying districts, and the few parties who furnish these in artistic form should be encouraged by patronage. Most of the lights using acetylene or other materials

are furnished in pleasing designs as a matter of course and of business.

Almost as numerous as street signs and lights are letter boxes. These are not under the control of the municipalities, however; and it is only necessary to say that it is to be hoped the Postoffice Department will find a way (and the will), to furnish a variety of more artistic patterns adapted to the various localities where they must be placed.

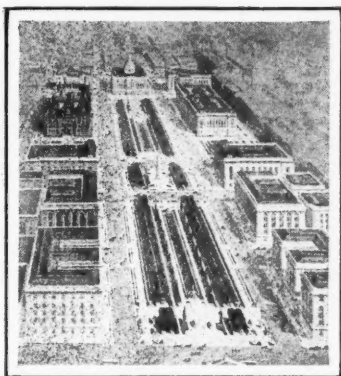
Improvements are constantly being made in fire alarm boxes; they are smaller and less obtrusive, and if kept neatly painted are at least not serious offenders. Considerable difficulty has been found, however, in designing a post fire hydrant which shall not be ugly. One of these is found every 400 to 600 feet along the streets of almost every city of the country, and their appearance is therefore worth considering. There are several makes, between which there is little difference in mechanical efficiency or excellence. We believe that the manufacturer who can add to his arguments that of an artistic design, will tip the scale decidedly in his favor.

#### CLEAN STREETS ESSENTIAL

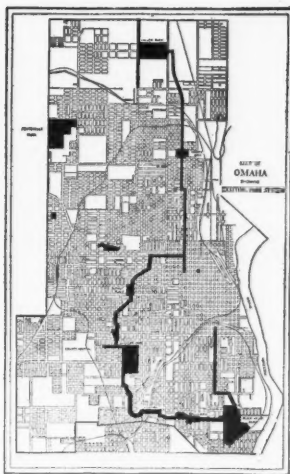
Largely through village and city improvement societies and similar organizations, our citizens are learning that no matter how beautiful a city may be in design and construction—or how plain—its appearance can be improved by neatness and cleanliness of the streets. Miscellaneous litter is the most unsightly matter seen upon the streets, and the most easily preventable. The average man who throws paper, apple cores, etc., into the street, would gladly avail himself of a litter barrel if such were near at hand; and much can be done to improve the appearance of villages and cities by placing these at post-offices, near fruit stands, and at intervals wherever large numbers congregate or are likely to throw away papers or other useless matters. But more attention should be paid to the appearance of these barrels than is often done; some are almost as great an eye-sore as the street-littering which they are intended to prevent.

The ordinary newsstand in most cities has the appearance of being a relic of mushroom days. It is time we did this thing better now, as they do abroad; and remove the shanties and sheds under our "L" steps, substituting for them something at least less ramshackle—possibly patterned after the kiosks of the Paris boulevards. Of larger structures, aside from buildings both public and private (and municipalities should not attempt to remove the motes of inartistic private structures until educated to recognize their own beams), bridges are probably the most important.





PLAN FOR GROUPING PUBLIC BUILDINGS—ST. LOUIS, MO.



OMAHA, NEB., AND ITS PARKS



MANNING BOULEVARD—ALBANY, N. Y.



A STREET SIGN  
(New York City.)



A STREET GAS LAMP



DRINKING FOUNTAIN  
(Continuous Flow.)



ISLE OF SAFETY  
(New York City.)



ONE BASIN FOUNTAIN  
(Zinc Figure of Stork.)



A FIRE ALARM BOX



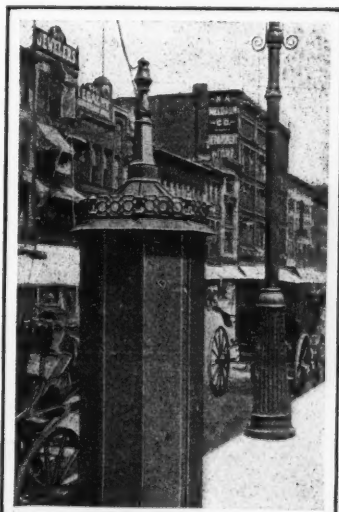
A FIRE HYDRANT  
(New York City.)



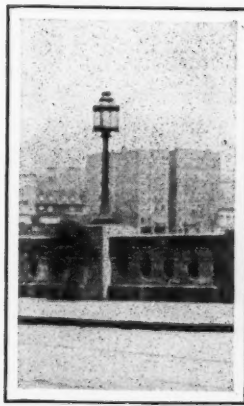
A LETTER BOX  
(Used in Office Buildings.)



DRINKING FOUNTAIN  
WITH LAMP POST



BUFFALO, N. Y.—SHOWING PATROL  
BOX AND ELECTRIC WIRING



ELECTRIC-LIGHT POLE  
(Washington Bridge,  
New York City.)



A TOWER CLOCK

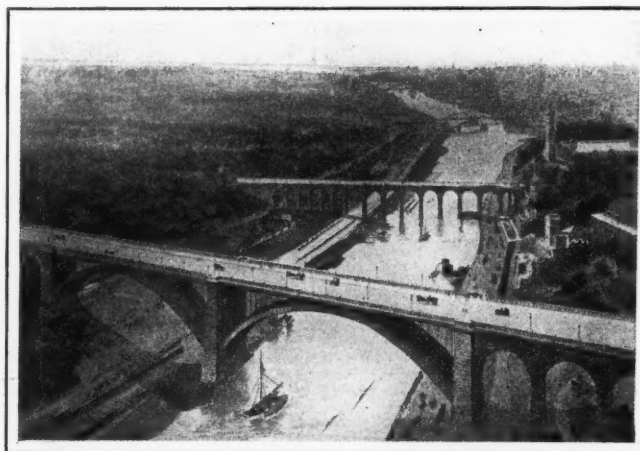
This has been recognized in many cases by securing the services of architects to collaborate with the engineers in the designing. The Potomac Memorial bridge is one of the most elaborate designs prepared in this country; but the beauty possible in simple lines is seen in the Washington bridge, New York. There is greater danger in overdoing the ornate than in extreme simplicity. Artistic proportioning and harmony with surroundings are the chief requirements for bridges; graceful here, massive there, severely plain but symmetrical in still another locality.

#### FOUNTAINS AND STATUARY

Of civic ornamentations, fountains and statuary are among the oldest, and there is no lack of beautiful examples of each. In spite of this, too, many of our cities have placed in their public squares cast-iron monstrosities which are infinitely less artistic and more expensive than would be a simple stone or concrete basin filled by a vertical jet of spraying water from a plain nozzle. It is generally a good plan to adopt only the simplest design of fountain, unless the more elaborate one be prepared or at least approved by an artist of some standing. And it must be remembered that what is appropriate in one locality may be inartistic in another setting.

The solely ornamental, such as statuary, arches, and "soldiers' monuments," should be designed and located on purely artistic principles, or should not be attempted at all. Such an adornment turned out by a quarry or grave-stone sculptor (however excellent and appropriate his general work may be), and located where it will be most conspicuous or least in the way, tells all visitors how artistically lacking is the community which, in its absence, would at least have had the benefit of the doubt. One class of structure combining ornamentation and utility is too uncommon in our cities—the clock tower. Private benevolence has placed clocks in church steeples, where they are difficult of observation, except from a distance; and clock dealers generally are looked to to supply the want gratuitously in business districts. Boston has placed clocks upon the tops of several subway stations, but few other American cities have municipal clocks at any points, except possibly on the City Hall. The open space or square, the diagonal street crossing, the bridge, each could appropriately serve as a site for such a tower.

Other structures and utilities might be introduced to advantage in American cities, but if introduced should be treated artistically and not with thoughtless crudity, as is so likely to happen. Among these are cab stands—places for the shelter of cab horses and their drivers, as well as of their patrons—where they will not interfere with street traffic or the rights of property owners; convenience stations in the business districts and small parks (they are already quite common in the suburban parks); benches provided with shade umbrellas (not to be covered with advertisements) in parks, at transfer stations, points of outlook,



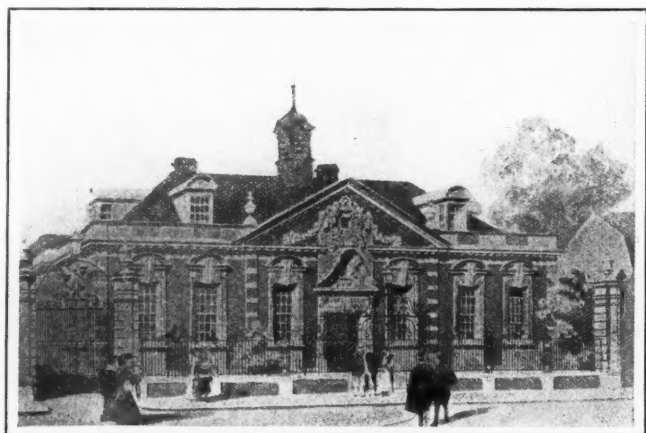
WASHINGTON BRIDGE—NEW YORK CITY  
(Showing Harlem River and The Bronx.)



ST. LUKE'S HOSPITAL—NEW YORK CITY  
(Morningside Heights.)

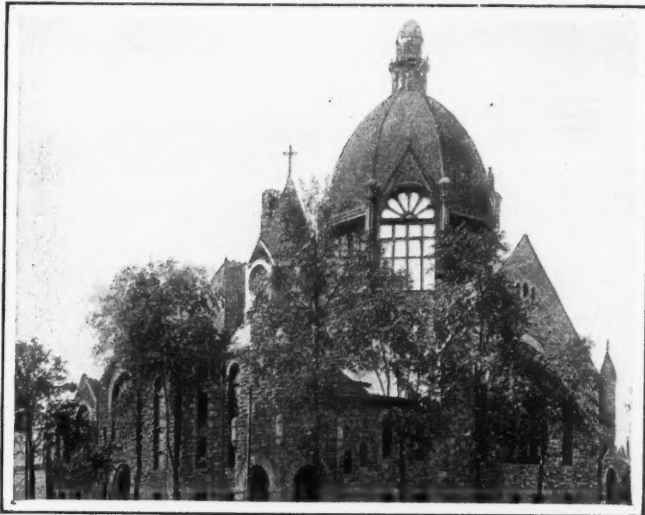


THE CITY POST OFFICE—WASHINGTON, D. C.

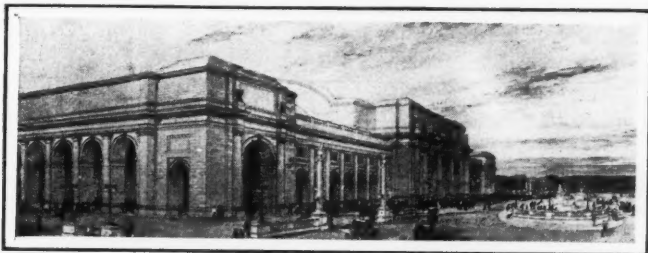


DESIGN OF FREE LIBRARY—BROMLEY, KENT, ENGLAND





AN ARTISTIC CHURCH—NEW YORK CITY



NEW PENNSYLVANIA RAILROAD STATION—WASHINGTON, D. C.  
(Thompson-Starrett Company, Builders.)



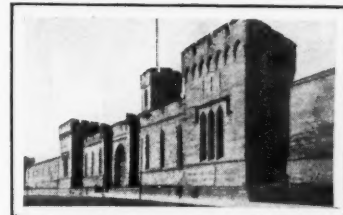
NEW MUNICIPAL THEATRE—COLOGNE, GERMANY



THE WASHINGTON MONUMENT—PHILADELPHIA, PA.



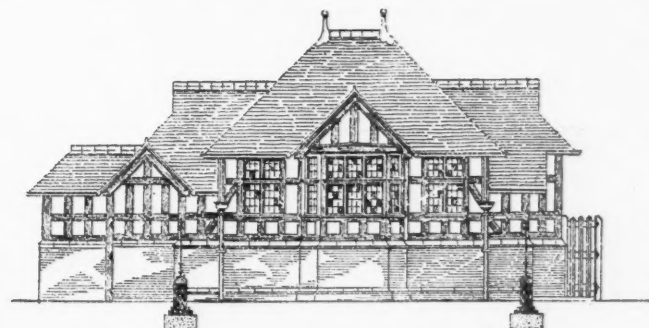
THE ARC DE TRIOMPHE—PARIS, FRANCE



A MODERN ARMORY



RAILROAD STATION—WABAN, MASS.  
(Boston and Albany Railroad.)



BATTERSEA, LONDON, ENGLAND  
(Public Convenience, Chelsea Bridge.)

etc. Refuge isles are of themselves useful only, but they offer opportunities for ornamentation such as electroliers and clock towers, and even small plots of garden or lawn, when of some size.

The artistic treatment of all these public utilities is of itself an incentive to individual citizens to endeavor to maintain their property in keeping with the street it faces (and it lacks a discouragement of such endeavor). But the city may do something directly to encourage this, such as furnishing shade trees, giving prizes for the most beautiful yards, window gardens, floral decoration of piazzas, vine-clad houses, and the like.

On all these points every part of our country is making rapid progress, and the "City Beautiful" is no longer sneered at as the impossible idea of an impractical enthusiast, or a criminal waste of the public money, but is recognized as a noble and even commercially profitable aim for every city.

## PLANNING FOR CITY BEAUTY

Improvement the Slogan of Every Town—Widespread Movement and Its Significance—Growing Demand for Skilled Labor and Artistic Designs—Washington's Expert Commission—The Work Elsewhere

By CHARLES MULFORD ROBINSON.

THE fact that a wave of improvement effort is sweeping over the country is common talk and common experience. Wherever you live, in village, city or town, and wherever you go for your vacation—if it be not into the wilds—the spirit of improvement is plainly in evidence, embodied usually in the enthusiastic members of an Improvement Society. So widespread a movement cannot fail to have its significance, its hopeful possibilities, and its dangers. These might be dwelt upon with profit. But there is also, beneath the broad, quivering, sun-flecked surface of the improvement flood, a deeper current. Such deep currents are worth looking into. They cut the channels, and if the flood subsides, it is their mark that remains.

To speak concretely, it is not mere club discussions, or the arraignment of delinquent public servants or the provision of rubbish cans at street corners, or the cutting of weeds, or the putting of flowers in vacant lots, which is going to leave a mark on our towns that will be plainly visible fifty years from now. These are excellent lines of activity, and are necessary ones if the improvement societies are to approach the realization of their ideas; but in the direct results of these acts there inheres no quality of essential permanence. To be sure, the opinion has been occasionally expressed by interested persons, that such activities are significant in pointing to the dawn in the United States of a Civic Renaissance; that there cannot be so truly popular a stirring toward the beautifying of the communities in which we live without the promise of the birth of a civic art destined to take a place with the best art expression of the world. This is much to hope; but as yet the accomplishments on which to base expectation are too meager to quote convincingly in evidence. There is some good sculpture—St. Gaudens's Sherman and Puritan, for example; there are a few really beautiful buildings, like the Boston Public Library; some mural paintings that we shall never wish to hide; and a good many admirable landscape pictures in the public parks—it is said that in this branch of public art we do now, indeed, lead the world. But the total, in the whole sum of our civic construction, is not great enough as yet to justify assured expectations. We shall have to look further if we would find the present current that surely is cutting a mark which will last.

### DEMAND FOR EXPERT PLANS

Obviously, such effort must be for the future even more emphatically than for to-day. I think it is to be found in the growing demand on the part of cities

and towns for expert plans that shall guide them, both in their newer areas and, far more significantly, in developing their older and more congested quarters. The best known example of such plans are those prepared for the city of Washington by the expert commission; but, with little heralding, the movement has spread far. New York, Harrisburg, Cleveland, St. Louis, Detroit, Syracuse, Denver, San Francisco, Columbia, Ottawa, Toronto, Honolulu, and Manilla are some of the communities that have lately secured suggestions from individuals or commissions, and half a dozen other cities are now negotiating for such reports. It is not cheap work, unless one puts the benefit of a well conceived and practicable plan over against the outlay, and it is well to explain the belief in its value and the faith in its future importance.

A city, or, less preferably, an organization on behalf of a city—as the Adornment Association in San Francisco, or the Board of Commerce in Detroit—retains the professional services of a man, or of several men, with whom work of this character has become a specialty. The adviser, or commission of advisers, goes to the city, spends some time there in examining it in company with the officials or other interested persons, converses with the men and women most prominent in the city's life, hears all the suggestions that are abroad for the town's improvement, and gets in touch with the local improvement organizations. A carefully-thought-out plan is then developed. There is effort to make it consistent, appropriate, and reasonable; artistic in the whole and in its parts; so logical, attainable and beautiful that it will appeal to the common sense of the people at the same time that it fires their ambition and arouses their zeal. The plan is put forward in a written report, illustrated where necessary with maps, diagrams, and drawings. This report is then published for permanent keeping, the newspapers having already given to the people the full text and the most essential of the diagrams.

The city thus receives its æsthetic charter, its guide to growth throughout its area. It is not expected that the municipality will accomplish at once all the changes which are recommended; but it has now a definite, concrete, and individual ideal to develop toward, and henceforward every step may be made to count in the right direction. With changing conditions it may even be necessary to modify the plan from time to time in some particulars; but the great consideration is that there is a general plan. The old, costly, ineffective method of haphazard developing is given over.



## IMPORTANT CONSIDERATIONS

The faith and hope in the plan is based especially on four considerations: First, that it is made by an outsider, by one who has no axes to grind, no property to boom, no interests to serve except the public's, no position to lose. Once, in preparing such a report, I was going over the principal park of the city with the superintendent, and pointed out to him a landscape feature that I considered thoroughly bad. "I fully agree with you," said the superintendent, "but the commissioners are daft over it. If I recommended the change, I'd lose my head." I had been called on to recommend what I thought was right, and I was going away in a few weeks with my head on my shoulders. The change was advised in the Report, and subsequently, of course, it was made.

The second consideration is that, because the adviser is an outsider, the problem is fresh to him. Familiarity with existing conditions has not so prejudiced him that he cannot see how they could be improved. Thus it is possible that he may perceive at once opportunities that the residents had never thought of. The third consideration is the fact that he is trained to the work and has had experience. He has schooled himself, in seeing towns, to see not only what they are, but what they might be, and ought to be; and he has traveled much—it may be over two Continents at least—picking up suggestions. And finally, in his make-up, there is, and must be, something of contagious enthusiasm, of zeal, and of faith.

The fourth consideration is that his recommendations are based on a science as exact, almost, as engineering. He deals not alone with superficialities; but investigates the tendencies of growth, the density of population, the present and the probable future traffic requirements; studies the individuality of the city, its history and its traditions—for he must not be a ruthless iconoclast—its economic characteristics, and sociological and hygienic needs; considers its financial resources and limitations if he be honest; and, if conscientious, reflects that properly to make a city beautiful is beautifully to fit it for the transaction of its business and for the living of its every-day as well as of its higher life—that art lies fundamentally in complete adaptation to function. If, then, he plans a civic center, or lays out a diagonal street, or locates a park, a dozen other factors than the mere appearance of the change enter into his decision. And because he has given weight to them and they have determined his choice, the selected site adds more to the city's beauty than an arbitrary fixing could have done. The mind approves while the eye is pleased, and to mere effectiveness there is thenceforth added an enhanced convenience and orderliness that in itself is satisfying.

It goes without saying that a report thus constructed commands public confidence and respect. The very fact that it has been ordered presupposes an inclination to adopt its findings and to carry out its recommendations, as rapidly as practicable. The re-

port is not a theoretical discourse on a fancied City Beautiful, but a concrete presentation of how beautiful a city might be developed from the given local conditions; and it is treated not as an academic discussion, but as a handbook or manual for constant use reference in the development of the city.

## EXPERTS MUST DECIDE

From what has been said of the study going into a carefully made report of this kind, it must be clear that in no two communities can the work or the recommendations be alike. To preserve, and even to emphasize, the individuality of the city or town, so far as this is of a worthy type, is one of the primary requirements of a good report. The Harrisburg park scheme, the Cleveland group plan, the comprehensive splendor of the Washington proposals are, indeed, typical in their differences. In my own studies I have found it advisable, too, in each city to seize upon the one or more particular needs of the town and to lay the stress most forcibly there. This also illustrates the individuality of the reports. For example: In Detroit the important points were the water front and the Campus Martius; in Columbus, O., and in Syracuse, N. Y., the great lack was a park system; in Colorado Springs the main necessity was the improvement of the very wide streets by parking; in Denver it was the development of the Capitol site; in Honolulu the creation of a civic center, of a worthier water entrance and of parks; and in Oakland, Cal., the provision of facilities for outdoor enjoyment and some changes in the street plan. In fact, one has usually to recommend changes of the latter kind, and the points that require the main emphasis by no means monopolize the suggestions.

With this description of the basis on which a report is built up, of the ideal toward which it aims, of the practicalness of its recommendation and of the completeness with which it considers future as well as present, there appears the reason for giving to it a significance and value, in the long perspective of a civic art development, which is possessed by no other contemporary movement in the field of civic improvement effort. These reports, by their very nature, are permanent in effect; and they are based not on individual caprice and changing tastes, but on a science. The "art" atrocities of the moment, the "improvement" enthusiasms, criticisms, and cleanings-up must pass away or be forgotten; but these will remain, and the changes that are wrought in accordance with them will lay the foundations of magnificent cities and beautiful towns—foundations broad enough to bear such superstructures as now we only dream of. The fine and encouraging thing is that so many communities are ordering the scientific investigations and reports and are substituting for the old-fashioned methods, with their resulting quick congestion of population and of traffic—and in which so much must be from time to time undone—a development on logical and carefully thought out lines.

## WASHINGTON AND ITS TREES

### Thirty Miles of Shaded Roadway—City Resembles a Park— Methods of Planting and Transplanting— Nurseries and Cost

By M. MENET

WASHINGTON, D. C., is pre-eminently a city of trees. Seen from the dome of the Capitol, it resembles a veritable park, but this appearance is not the gift of a bountiful nature. It is the direct and gratifying result of a public policy inaugurated in 1872.

The number of trees that serve to render Washington the "City Beautiful" reaches 90,000, and there are thirty miles of roadway completely covered by the overhanging branches of trees planted along the curb. This last, of course, is not one continuous stretch of thoroughfare, but is broken up into blocks to be found in the various sections of the city.

The oak tree leads in specific and popular favor to-day, superseding the silver maple, which was, however, planted in great quantities originally and hence is still found in abundance. When the plan of planting trees was first inaugurated the idea was to select such trees as would be the quickest to produce shade, and in pursuance of this policy the silver maple, the ashleaf maple, the honey locust and the Athenian and Carolina poplars were set out in great numbers. After eighteen years in the producing of shade and foliage, however, adverse judgment has been passed upon these trees. The poplars are now considered dangerously tall in that they are easily broken by storms and they give no better shade than trees of lesser height. They are also subject to death-dealing attacks by caterpillars. The silver maple is free from this pest, but it gives a light, unsteady shade and is easily blighted.

Of so great importance are the trees considered in Washington that the cutting down of a single one is a matter calling for the careful deliberation of all three of the Commissioners, and as a result of this fact these trees remain to-day; but as they are destroyed by storm or nature they are replaced by the red or pin oak, the American linden, the European sycamore, the ginkgo, an importation from the Japanese, or the American elm. For wide avenues the elm, the sycamore and oak are preferred because they have a large growth and their branches spread extensively. For the same reason they are not desirable for narrow parkings, as their branches would extend into the buildings before which they are placed and, if planted too close together, their outshoots would interfere with their respective growths. The ginkgo is especially suitable for narrow parkings because it is of upright growth and a small tree. The ginkgo is a beautiful tree, the leaf of which resembles in shape the outline of a pear. In the fall its foliage turns a bright yellow and a very light frost is sufficient to bring a shower of gold to the ground.

## METHODS OF PLANTING

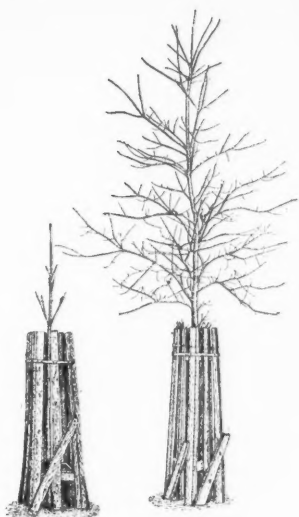
Washington's distinction in the matter of trees lies, rather than in anything else, in the method of planting, by which only trees of one kind are used in any one thoroughfare. It is this that makes for variety in the city and yet gives every avenue its distinctive aspect. For instance, for the entire length of Massachusetts avenue, the longest and finest residential street in the capital, from Lincoln Park to Sheridan Circle, American lindens furnish the shade and the roadway is indeed a beautiful bower. These trees are planted in four rows on the outer and inner edges of the parking.

The most beautiful vista of trees to be seen in Washington is the least known because it is out of the beaten path of both tourists and citizens. It extends along Pennsylvania avenue southeast from the Capitol to the eastern branch of the Potomac. There are four rows of trees here, and when these come to full maturity the view bids fair to outdo anything of the kind in the country. The car tracks lie in the central plot of green, extending from one end of this section of the avenue to the other, on the outer and inner edges of which this small, compact tree with its dense, waxy foliage has been planted. Experts claim that it is the most perfect row of trees to be seen anywhere. At one end the dome of the Capital looms in view over the south wing of the Congressional Library. From the other end you see a stretch of blue sky and the green of the country beyond.

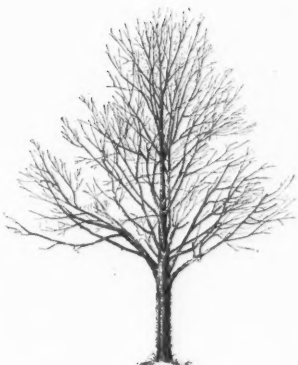
It takes from twelve to fifteen years to produce from a seed a tree whose shade is of much value. Although the opposite is popularly supposed to be the case, it takes an oak no greater length of time to come to maturity than a maple and it has a more enduring life when once grown. Washington's trees are grown in the Government nurseries. They first see light in large seed beds, where they are planted as thick as peas. One year's growth sees them waving leafy tops one foot above earth and then they are transferred to what are called nursery rows, where they have more space for their growing roots. After several years' existence here they are ready to take their place in the city's great out-of-doors. The saplings are stripped of their crisp leafage before they are transplanted, but they blossom forth in renewed beauty the following year. This method of trimming them back severely produces a symmetrical tree whose branches spring, as a rule, from one straight central trunk or leader, as shown by the illustrations.

The method of transplanting trees from the nurseries to the streets is the same with all species of tree. It is as follows: In the parking where the tree is to be set, a hole seven and one-half feet long by three feet wide by three feet deep is dug. Into this sixty-six cubic feet of the best top soil obtainable anywhere in the city is put and the excavated soil is carted away to the dumps. The tree, freshly dug up from the nursery on the day of the transplanting, but with its roots thoroughly protected by an abundance of the nursery bed soil, is set into this hole of good rich dirt and planted. It is placed inside of

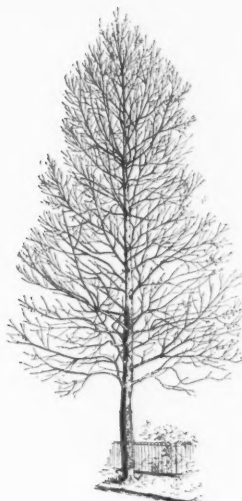




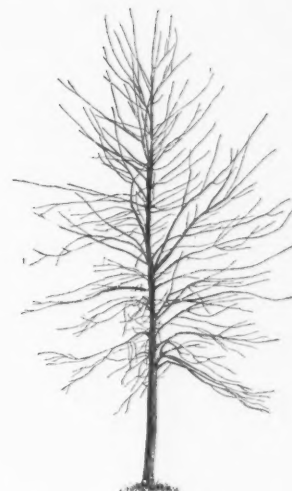
THE RED OAK



THE LINDEN



THE SYCAMORE



THE MAPLE

a wooden box seven feet high and strapped securely to the sides of the box, being thus protected from both animals and storm.

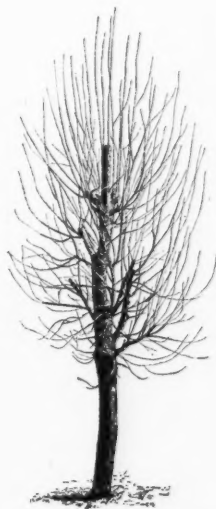
The particular shape of the tree hole is not a matter of importance; it can be round as well as oblong. For a city parking, however, it is more convenient to dig it the latter shape, as that conforms best with the outline of curb and sidewalk. The depth is the important thing, as the amount of moisture the new tree receives depends upon this. In instances where the soil is particularly hard, a depth of three and one-half feet is dug. When good top soil is not obtainable, or the cost too excessive, stable manure is mixed with the excavated earth except in such cases where this has too much gravel, and this is used for filling the tree hole. No other fertilizer is used. This method of transplanting trees has been in force in Washington for fifteen years, and the results obtained have established it as the best possible method. The cost of transplanting a tree from the nursery to the street, including the cost of the tree box and strap, is four dollars. It is the same for all trees.

#### A YEAR'S WORK

During the last year, from July, 1905, to July, 1906, three thousand two hundred and twenty-three (3,223) trees were planted in the District, quite an increase over the number of the previous year, which amounted to two thousand seven hundred and fifty-five (2,755). If these trees had been purchased from a nursery, instead of grown in the Government nurseries, they would have cost from sixty cents to one dollar apiece. Just what the cost of producing them in the nurseries is, cannot be exactly given, but it is generally estimated that the cost of maintaining the nurseries is equal to what the cost of the trees would be if purchased elsewhere. But for a city to raise its own trees—this, in Washington, is considered infinitely a better plan. For instance, a number of years ago it became necessary to purchase trees from outside nurseries and twenty-five per cent. of those trees died. On the other hand, the loss of the last year's plant-



THE SILVER MAPLE



THE CAROLINA POPLAR



THE POPLAR

ing of three thousand two hundred and twenty-three trees has been less than one per cent., not twenty-five trees altogether having been lost. The reasons for this are plain. In the first place, the trees are not chosen with so much care when purchased from a foreign nursery as when grown at home. The roots become either too dry or covered with mold from being too wet during the shipment, and as a result they are by no means in a flourishing condition when set into new soil. The cost of maintaining the three thousand two hundred and twenty-three trees set out during the last year is estimated at ten cents a tree. Since 1872, the beginning of the present policy of tree planting, the 90,000 trees that adorn the streets of Washington have cost the District about \$6 apiece, a sum of approximately \$560,000 having been spent in this department.

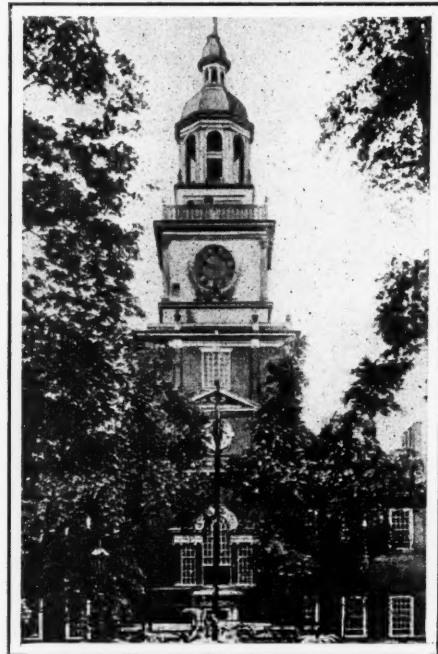
Oak trees are from five to seven years old before they are of sufficient height to be transplanted. From eight



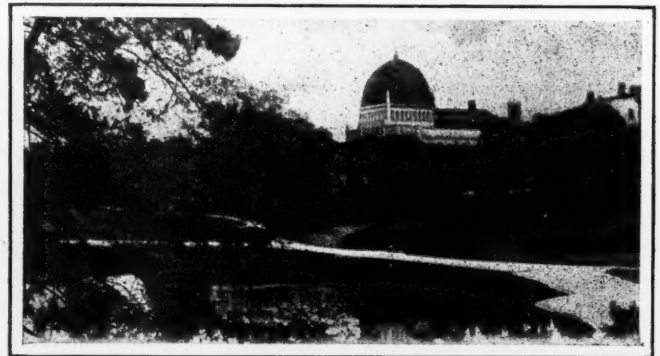
VIEW OF EIGHTH STREET, NORTH OF FLORIDA AVENUE,  
WASHINGTON, D. C.  
(Showing Anthenian Poplars.)

to nine feet is the required height of a tree placed in the parking, as the boxes are seven, and it is deemed necessary for the tree to extend somewhat above this. It takes the same number of years to bring the Norway and sugar maples to this height. The sycamore and silver maple sometimes reach this height in three years, but usually require five. The linder requires five always. The ginkgo requires five, sometimes six. The ginkgo grows quickly after getting a start, but is slow at first. Trees are planted in the District in the autumn, just as soon as the leaves begin to fall until freezing weather prevents; in the spring, from about March 1, if the ground is in condition, until May 10, from the time the trees begin budding until the leaves are out.

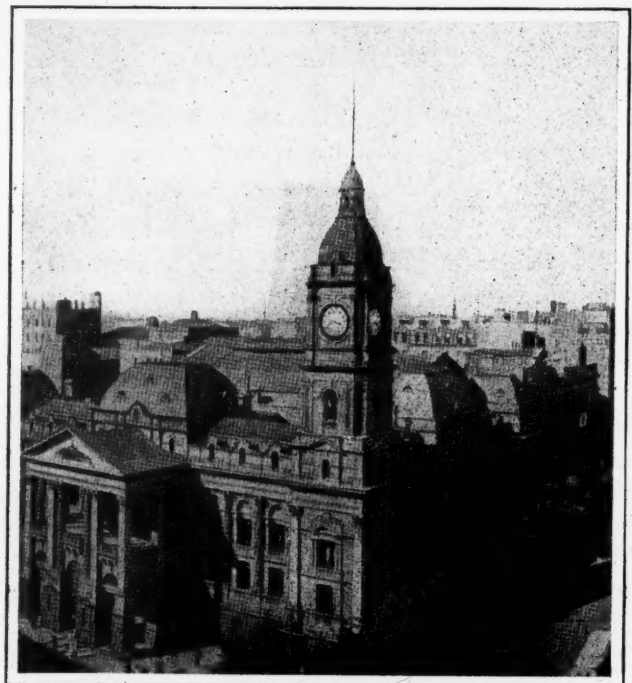
## SOME BEAUTIFUL BITS



INDEPENDENCE HALL, PHILADELPHIA, PA.  
(Chestnut and Sixth Streets.)



A VIEW OF CENTRAL PARK—NEW YORK CITY

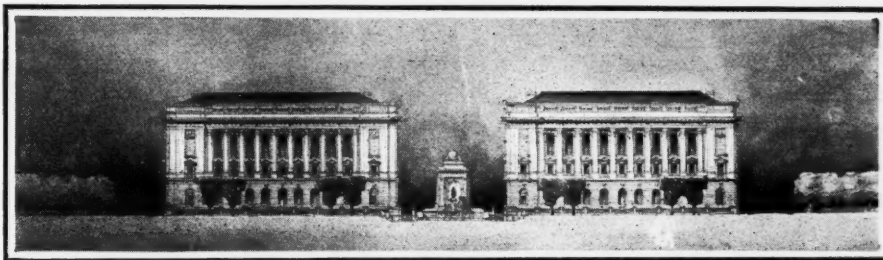


THE CITY HALL, MELBOURNE, AUSTRALIA  
Collins and Swanston Streets.

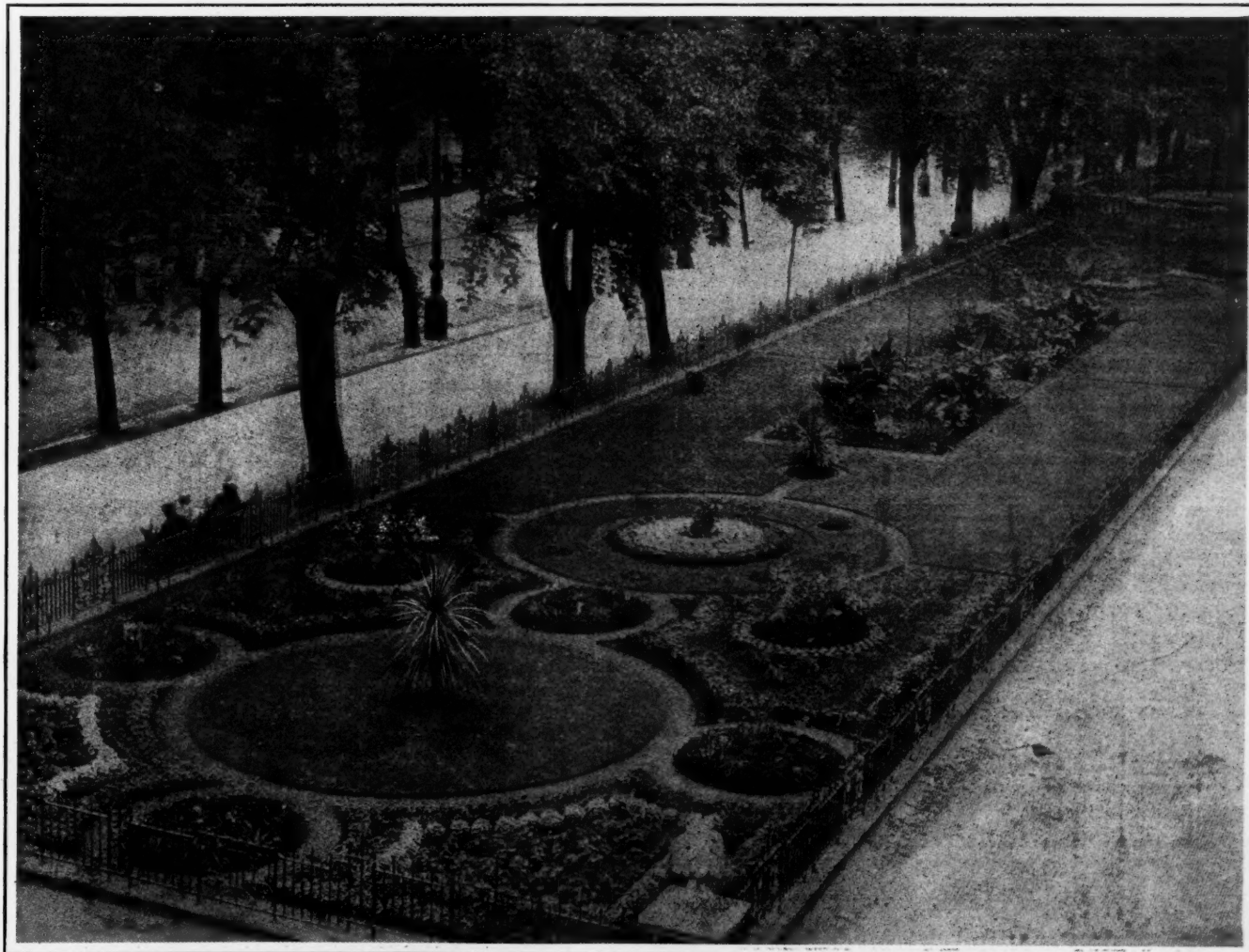




VIEW IN TREASURY GARDENS, MELBOURNE, AUSTRALIA



THE GROUP PLAN OF THE PUBLIC BUILDINGS OF THE CITY OF CLEVELAND  
Section through the Mall showing Federal Building and Library  
(Courtesy of "The Outlook")



CHELTENHAM, ENGLAND—VIEW OF THE PROMENADE

## THE DISPOSAL OF MUNICIPAL WASTE

Systems and Methods, with Special Reference to American Conditions—Foreign Destructors—Refuse Problem in Great Britain and Ireland, British Colonies and Europe in 1906

By WILLIAM F. MORSE, Sanitary Engineer, New York.

This Series of articles begun in the February number, will be continued until completed and will be illustrated by original drawings, cuts, diagrams and pictures, and contain many tables valuable for reference.

### The Subjects Already Treated by the Author Are:—

1. The Waste Collection Service in American Towns; Methods and Results.
2. Definition of Terms; Quantities; Proportions; Character of Waste in General.
3. Garbage; Analysis; Proportions; Values.
4. Dry Refuse and Rubbish; Quantities and Treatment.
5. Classification:—Commercial Values after Recovery.
6. The Refuse Utilization Stations in New York, Boston, Buffalo, and Brooklyn (illustrated).
7. Municipal Ashes; Analysis; Proportions; Values when Separated.
8. Ashes from Cremation of Garbage; Analysis and Values; Comparative Table.
9. Comparison of Ashes from English and American Cities; Cremation Means.
10. The Utilization of Municipal Waste in General; English and American Methods.
11. Commercial Values of Refuse and Ashes when Marketed and Manufactured.
12. The Analysis of Garbage; Tankage, Its Value (Special Tables).
13. The Garbage Disposal Plant, Cleveland, Ohio.
14. Street Sweepings; Fertilizing Value and Treatment.
15. Comparative Commercial Values of Waste.
16. Foreign Destructors; Special Chapter by an Eminent Authority.

### The Following Are to Appear:—

17. Methods of Disposal; Cremation.
18. Beginning and Progress.
19. Apparatus and Furnaces; Record of Work (illustrated).
20. Apparatus and Furnaces; Record of Work; Results.
21. Types of Furnaces; Their Employment; Municipal, Institutional, Industrial, Medical, Laboratory (fully illustrated).
22. Calorific Value of Waste as Fuel (comparative table).
23. Reduction and Extraction Process Described and Illustrated; the Earlier and Later Methods.
24. American Methods; Col. Waring and His Successors.
25. Present Situation in This Country; Résumé.
26. Means for Improvement as Suggested by Several Investigators.
27. What May Be Expected of the Future.

### Special Article—Continued

By W. FRANCIS GOODRICH, A.I.Mech.E., F.I.S.E.

WHILE a steady pumping load is undoubtedly the better load for a destructor, yet the work which is being done both at lighting and power stations, as also at traction stations, is very satisfactory, and perfectly justifies the combination of destructors and the fullest possible utilization of the power.

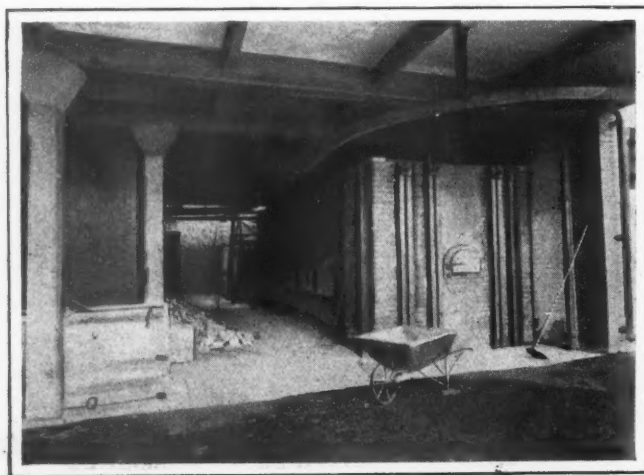


FIG. 22.—STOKE-ON-TRENT, DESTRUCTOR CELLS

At the present time about 4,500 tons of refuse are being destroyed daily at such works, the electrical output per ton of refuse destroyed varying from 25 to 100 Board of Trade units. The highest recorded results are set forth in Table No. XXIX and may with advantage be compared with the recent results obtained at Westmount, Montreal, which are also included.

TABLE NO. XXIX.

SOME RECENT RESULTS IN POWER PRODUCTION AT COMBINED ELECTRICITY AND DESTRUCTOR WORKS

Works	Duration of Test	Water Evaporated Per lb. of Refuse from and at 212 F. lbs.	Electrical Output Board of Trade Units Per Ton of Refuse
Stoke-on-Trent.....	15 hours	2.6	108.1
Nelson.....	8 " max'm	2.35	.....
".....	5 w'ks av'ge	2.12	104
Todmorden.....	11 hours	2.09	.....
Burnley.....	1 ord'y w'k	2.00	.....
Bangor.....	7½ hours	1.98	.....
*Cambuslang.....	6 "	1.92	97
†Woolwich.....	24 "	1.917	100
Preston.....	9 "	1.7	100.24
Westmount.....	8½ "	1.36	.....

\*Temperature of combustion chamber at start 750°F. feed water 460°F.

† Test conducted by The National Boiler Insurance Co. Ltd.,

### PRESTON COMBINED ELECTRIC TRACTION AND DESTRUCTOR WORKS

The Combined Electric Traction and Destructor Works at Preston are among the most interesting and convincing in Great Britain. Here for the past eighteen months the entire traction service of this important town has been operated from the town's refuse alone, not excluding Sundays and holidays.

Some thirty cars are in operation for about seventeen hours daily over about nineteen miles of track, and as much as £1,000 per week has been taken in fares. About 21,000 Board of Trade units are generated every week from refuse alone, or an average of about 60 units per ton of refuse destroyed.

The destructor plant comprises 4.4 grate Meldrum front-fed regenerative destructors, total capacity about 250 tons daily, 4.30 x 8 ft. Lancashire boilers for 200 pounds pressure, regenerators, and Greens economizers. A special feature of this installation is the special offal charging arrangement and also the unique provision made for cremating large carcasses without handling.



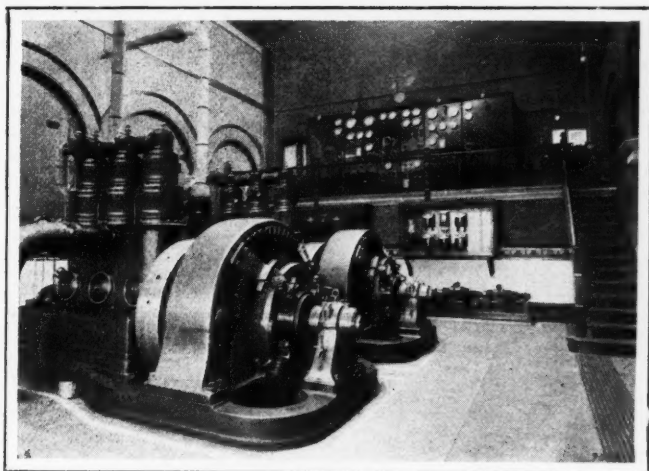
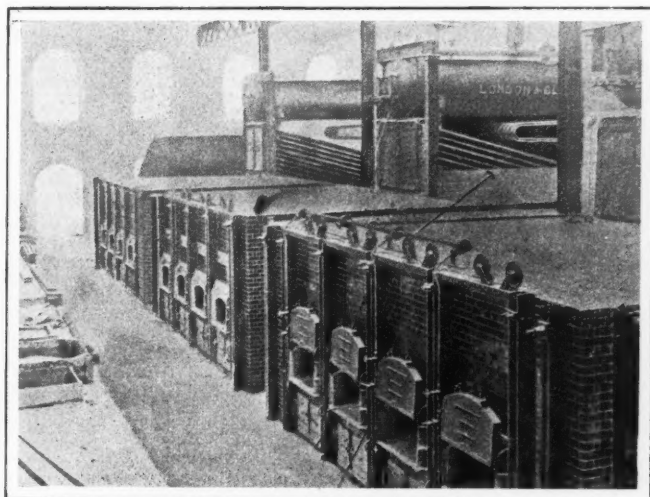
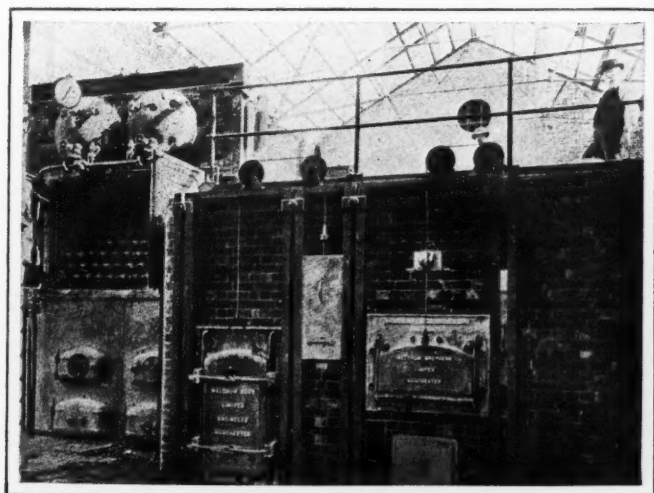


FIG. 23.—STOKE-ON-TRENT, GENERATING PLANT

FIG. 24.—BOROUGH OF WOOLWICH, LONDON, ENGLAND  
REFUSE DESTRUCTOR WORKSFIG. 25.—CHRIST CHURCH, NEW ZEALAND  
(Type Destructor.)

At Swansea (South Wales) a five-cell back fed Horsfall destructor is combined with a sub-station and provides power for traction purposes. During a recent test an evaporation of 1.20 pounds of water per pound of refuse was obtained, about 60 tons of refuse is destroyed daily and an electrical output of 32 units per ton of refuse destroyed has been obtained.

This plant can, however, scarcely be compared with that at Preston, as although the weight of refuse destroyed daily is similar at Swansea, coal firing is there arranged for in connection with the destructor boiler, while the track at Swansea is only  $4\frac{1}{2}$  miles (route length) as compared with over 19 miles at Preston.

#### ELECTRIC LIGHTING AND DESTRUCTOR WORKS AT STOKE-ON-TRENT

It has already been observed that at Preston the whole of the power required for the operation of the electric traction service is provided from refuse alone. At Stoke-on-Trent it is possible to record over a period of nearly two years a similar result in connection with a combined lighting station; from about thirty tons of refuse daily sufficient steam is produced to supply all demands for public and private lighting, no coal whatever being used, in fact no coal-fired boilers are installed. The destructor and power plant which is similar (although smaller) than that at Preston is illustrated in Fig. 22, while Fig. 23 illustrates the generating plant.

Nothing can be quite so convincing either among combined sewage or electricity works as those few works where no coal whatever is burned, and where no supplementary coal-fired boilers are installed; where refuse is relied upon as the only fuel, there can be no criticism, and such instances afford a very conclusive answer to those who still doubt the fuel value of refuse.

The latest combined electricity and destructor works is that at H. M. Royal Dockyard, Chatham; the destructor is of the Meldrum regenerative front-fed type and will deal with about three tons of refuse per hour for eight hours daily, supplying steam at 200 pounds pressure to the adjoining main generating station recently constructed by the Admiralty.

In thus deciding to utilize a large quantity of refuse, the British Admiralty have followed the lead of many municipal authorities. The results at Chatham Dockyard, owing to the character of the refuse, will, in all probability, be far better than anything yet recorded in connection with combined undertakings.

#### DESTRUCTORS COMBINED WITH WATERWORKS— SHEERNESS

Among destructors combined with waterworks, the most successful example in this country is that at Sheerness, a plant which has been inspected and very favorably commented upon by some few American engineers. Here for three years past the destructor has shown a *net surplus* in relief of the rates of over £400 per annum, the total cost of repairs and maintenance being less than £10.

The destructor is of the Meldrum regenerative front-fed type, and deals with about fourteen tons of refuse daily; the total cost of the plant, excluding the chimney, only was £3,600.

Only two other works of this kind are in operation, a small plant at Hunstanton and a large plant at Blackburn. It is a combination which does not attract, owing to fear of contamination, but in cases where the reservoirs are not located at the pumping station or where covered reservoirs are used, with a well-designed destructor plant no trouble need be feared.

While the waterworks at Sheerness are in a very central position, waterworks as a rule are even further removed from inhabited areas than are sewage works, and for this reason, if for no other, the erection of destructors at waterworks will be limited.

#### CLINKER UTILIZATION

Having destroyed, or rather changed, the nature of the refuse, we now have, according to the season of the year and other conditions, from 22% to 35% of vitreous clinker, free from organic matter and useful for many purposes.

In so far as this country is concerned the writer is still firmly convinced that where a good vitreous "commercial" clinker is produced there is not, nor has there ever been a "clinker problem." Where an unsatisfactory clinker is produced, due either to an inefficient destructor or inefficient handling of a good destructor, the authorities can only blame themselves if they are faced with what they are pleased to term a problem, and have to pay to get rid of a useless material.

Whether their choice of a destructor was at fault or, on the other hand, whether their management is loose, they are to blame. In a few cases of this kind the clinker is a source of trouble and expense, but these are isolated cases, few and far between.

Generally speaking, clinker is a good asset, and in many cases it is a very material source of revenue.

Whether plant of any kind be installed or not for treatment of the clinker must always be determined by the local conditions. It is, for instance, a sheer waste of public money to install a plant of any kind if the clinker can be sold at a good price as it comes from the destructor.

At the destructor works of the Metropolitan Borough of Wandsworth, London, all the clinker is thus sold just as it comes from the destructor at 1s. 9d. per cubic yard, and so great is the demand for it that all day long it is being shoveled into carts long before it is cold.

At Watford Destructor Works, all clinker is similarly sold at 1s. 8d. per ton on the ground just outside the works. Under such circumstances it would be folly to incur a large expenditure for brickmaking plant, or even the moderate expenditure involved in the purchase of a mortar mill or a crushing and screening plant; their products are not wanted, while the untreated clinker is, and the revenue is accordingly a net one.

In many towns there is a great demand for destructor

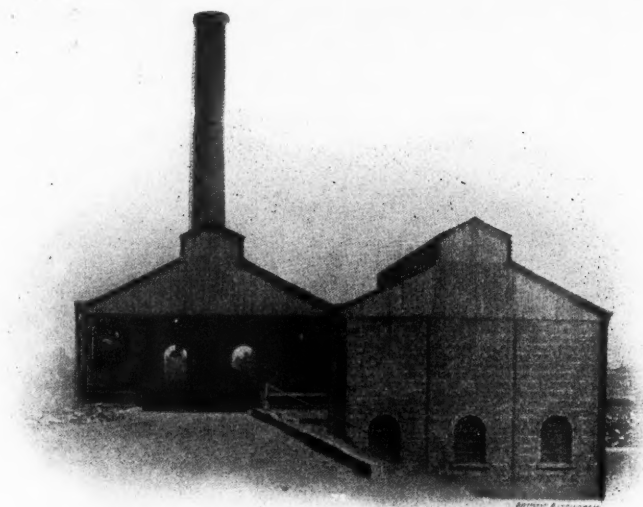


FIG. 26.—JOHANNESBURG, SOUTH AFRICA  
SIMPLEX DESTRUCTOR, SHOWING TIPPING PLATFORM

clinker mortar, and at the present time over 300 mortar mills are in daily operation at such works; in every case there is a net profit, while the mortar is considered by some to be too good for ordinary building purposes.

Where clinker can be utilized for bacteria beds, or where it can be best sold graded, crushing and screening plants have been installed. Some twenty-five works in this country now have crushing and screening plants in operation.

The utilization of clinker for bacteria beds has already been referred to; the sale of clinker for this purpose or its utilization instead of coke, coke breeze, ballast and other media is in many cases a source of considerable revenue.

Some twenty municipalities are now operating clinker paving flag plants with excellent results; given a good clinker, very durable flags are produced at a saving to the ratepayers. Naturally the most convincing figures in this connection are those from the larger towns and cities, where the demand is such that the plant can be operated continuously. Clinker brick-making plants have now been installed in some half dozen towns in England and very fine bricks are being produced.

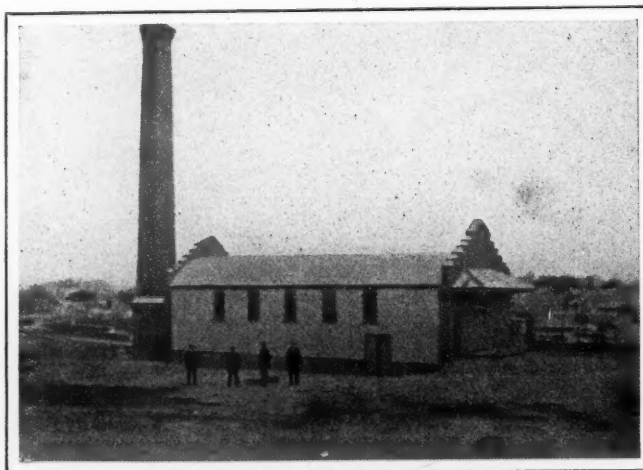


FIG. 27.—ANNANDALE, AUSTRALIA  
SHOWING DESTRUCTOR WORKS



The manufacture of mortar, paving flags and bricks from clinker has met with much opposition in this country from those who are generally opposed to municipal trading. Such opposition is perhaps the most convincing testimony as to its success.

It is contended that mortar must not be made and sold by a municipality in competition with a ratepayer, that a local authority should not even be permitted to make paving flags or bricks, because by so doing established industries are threatened. The height of absurdity has perhaps been reached when those who manufacture and sell carbolic powder protest against the use of flue dust as a base for carbolic powder, although the municipality purchases the carbolic acid.

Hampered thus on every hand, remarkable progress has been made, and greater progress will undoubtedly be recorded in the near future.

#### CONTINENTAL PROGRESS

On the Continent refuse disposal is now engaging the attention of many municipal authorities and, in spite of the activity of German engineers, British destructors are likely to be extensively adopted. The Herbertz destructor, designed to some extent on the lines of the most successful British types, has been adopted at Fiume, Austria, and very satisfactory results are reported, but there is no reason to suppose that this destructor can show such efficiency as may be obtained with British destructors properly adapted for dealing with the varying refuse of Continental countries. The Horsfall Destructor at Hamburg (Buller-deich) which has been considerably altered during the past few years, is reported to give much satisfaction. De-

structors of the same type have been erected in Zurich and Brussels. Russia can now boast of two destructors, one at Czarskoe Selo, the other a small experimental plant at St. Petersburg, both of the Horsfall type, and curiously enough, after years of contemplation, both destructors were erected during the past year, when that unhappy country was in the throes of revolution.

At Fredericksburg (Denmark) a destructor of British make has been erected, but at present there is no sign of further progress in Scandinavian municipalities.

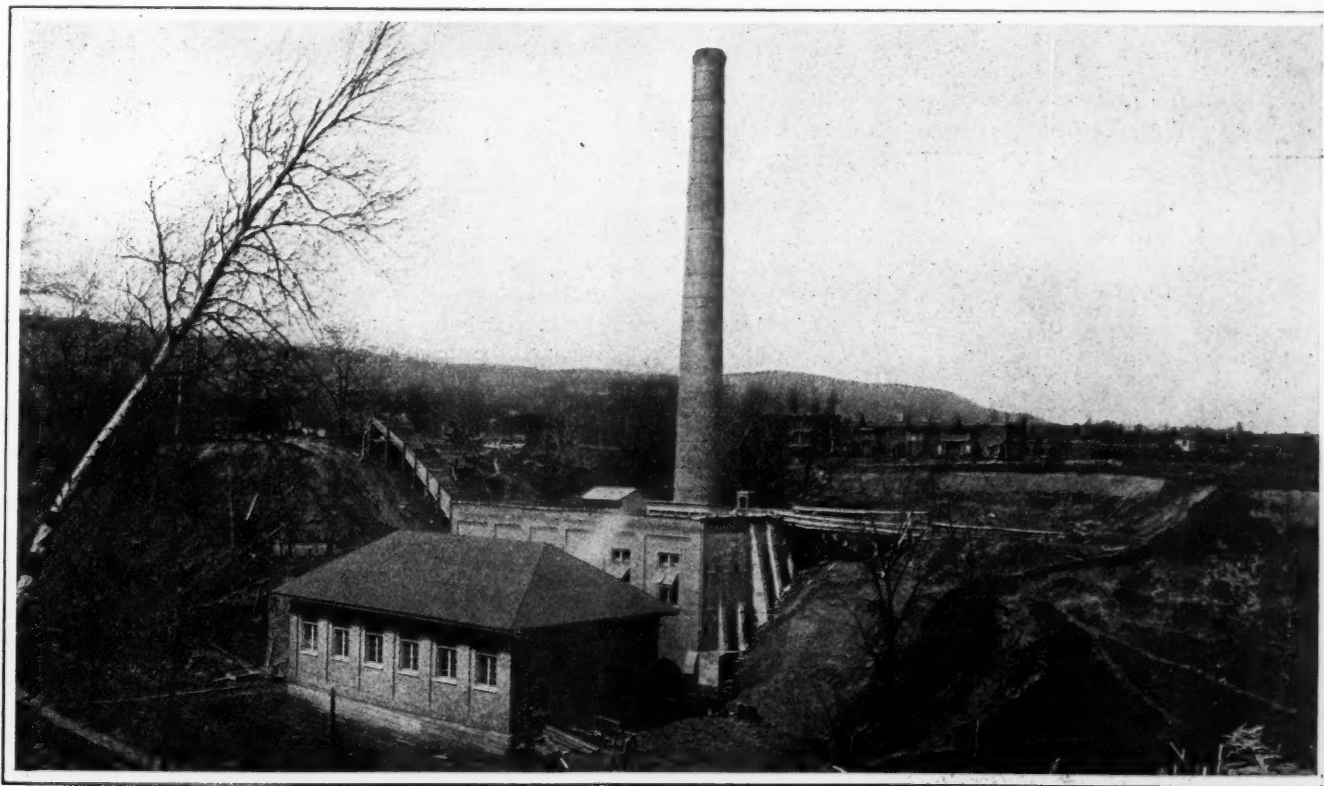
During the present year the first destructors to be adopted in France will be erected in Paris, comprising three distinct installations of the Meldrum patent regenerative top-fed type.

Each of the three works will be equipped with 3.4 grate destructors, Babcock & Wilcox boilers, 9.4 grate plants in all, having a combined total destroying capacity of between 500 and 600 tons daily.

The town of St. Etienne has ordered three Meldrum destructors having a total capacity of over 200 tons per day.

Holland, Greece and Turkey cannot report progress at present; in the former country British destructors are now being considered for some of the most important municipalities. In Greece there is not a whisper of sanitary refuse disposal. Turkey is equally apathetic; the dogs of Constantinople, ever multiplying, continue to account for the garbage of this interesting and historic city whose authorities at present seem quite content to avail themselves of the services of these willing and unpaid scavengers for all time.

*To be continued*

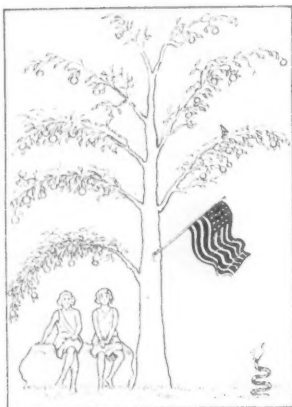
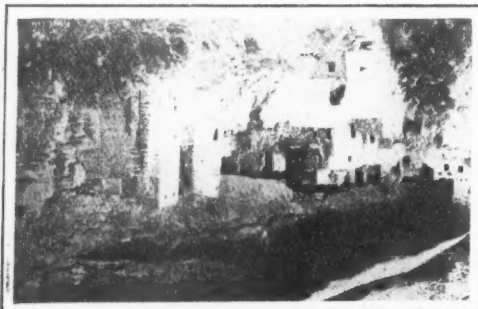


EXTERIOR OF REFUSE DESTRUCTOR AND ELECTRIC-LIGHTING PLANT, WESTMOUNT, CANADA

## FROM A BIRD'S NEST TO THE BELMONT



A BIRD HOME

THE ADAM RESIDENCE ON  
EDEN AVENUE.  
(By our own Kodak)

A CLIFF DWELLING



HOME OF DIGGER-INDIAN

THE evolution of the home must always prove an interesting study. Mr. James Franklin Chamberlain has rendered it distinctly more so by the compilation of a capital little book entitled, "How We Are Sheltered," published by the MacMillan Company, of New York City. It contains 184 pages and sells for 50 cents, thus is it brought easily within reach of both the mind and pocket of the average student.

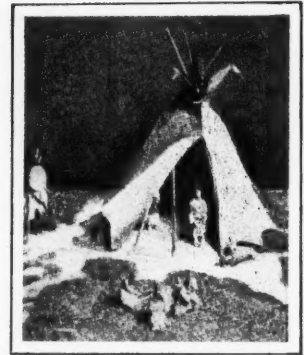
Mr. Chamberlain is one of the Department of Geography of the State Normal School of Los Angeles, California, and has written several other books, "How We Are Fed," "How We Are Clothed," etc., on similar lines and with similarly satisfactory results. From "How We Are Sheltered" are here reproduced several cuts, besides others secured from other sources.

If it is permitted to sequentially quote Genesis in a manner not antagonistic to science, it is on record that "First came the creeping things," then "the birds of the air, then the fish, then animals, and later, man." Mother Nature herself had apparently instilled into every living thing a demand and cry for shelter, or home. Worms, ants, bees, birds, even the fish—everything with life—seeks cover and protection from both the elements and enemies.

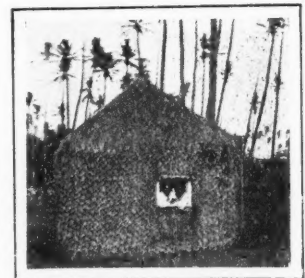
Out of them all, the beaver, perhaps, may be credited with possessing the most distinct and definite idea of constructing a home—giving many a lesson to the jerry builder of modern times—though birds in the finish and completeness of their stuccoed or concreted surface residences run these intelligent and industrious creatures very close in this regard. If by evolution man has really reached his present elevated position in the animal scale, originating as he is claimed to do, from the primordial atomic globule, through the tadpole via the frog and ape, the argument for his shelter-seeking propensities rather loses ground, for none of these mentioned are what can be called "domesticated" things, in any sense of being home occupiers or lovers.

The mythical first man, and for the matter of that, the first woman, would doubtless, be the first seekers of shelter and retirement. They probably sought the shade of friendly trees. Their furniture and utensils would not be extensive, and the items of clothes and tailor's bills did not loom up into anything like amazing proportions, though Eve probably wore feathers in her hair, just as the Fifth avenue woman of to-day wears them in her hat; nevertheless, there would undoubtedly be quite an appreciable difference in the cost of such items. Adam would have to get along as best he could in this regard, just as he always has done ever since.

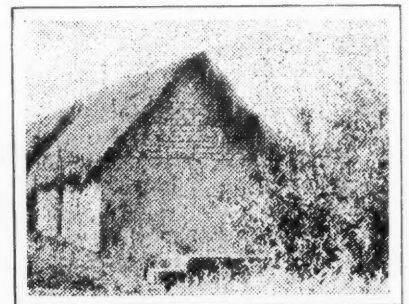
The first definite form of a home, or rather of a house, or still more properly of a dwelling, would be that of the men of the Cliffs. Fish, being the natural food, easily and plentifully obtained, these people, the early forerunners of our race, would live near such sources of sustenance and sup-



A TEPEE



HAWAIIAN GRASS HOUSE



AN AFRICAN HUT

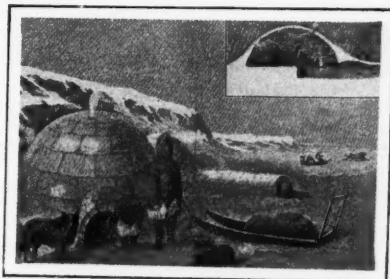


NAVAJO HOGAN AND RAMADA



LAPLANDER'S WINTER HOME





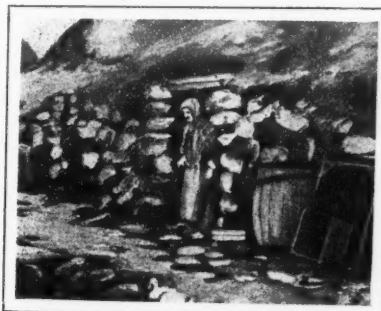
AN ESKIMO HOME



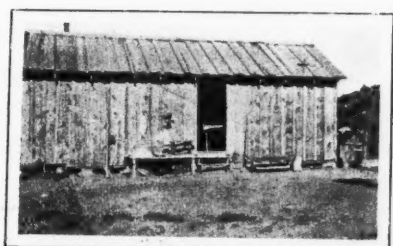
EARLY HOUSE IN AMERICA



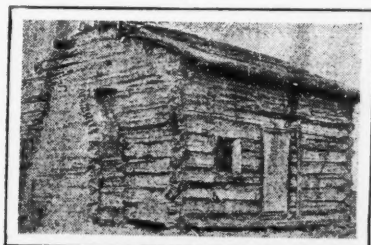
RUSSIAN PEASANT HOME



CROFTER'S HOUSE



MOUNTAIN MINER'S CABIN



LOG CABIN WHERE ABRAHAM LINCOLN WAS BORN

plies, hence their apartments stuck high on the rocky heights of cliffs which were, in reality, close to the river side. The waters of the chasms having since diverted their courses, or become evaporated, have left such residences high and dry.

As he developed, the human sought other foods, and as his appetite and palate became jaded or excited his attention would turn toward the fields and the woods; hence arose the tent, whether of twig or brush or of skin, as a result, and which survives, even to-day, as perhaps the oldest and most permanent form of habitable home, not greatly altered in outward semblance, but only in materials—the outcome of years of perpetuation. The modern gypsy is but an historical replica.

The great variety and extent of this class of household is almost bewildering. The Digger-Indian's cover, the Teepee, the Hawaiian Grass House, the African Hut, the Navajo Hogan and Ramada, a sort of winter and summer place in one, the Arab's Tent, all adaptations or modifications of the original design, are still in use in many parts of the world, just as they have been long before the dawn of Christianity.

As the tendency to roam became limited, permanence was sought; then came, in the cold countries, the Laplanders' Winter Dwelling, the Eskimo's home, the Log Hut and the Stockade for protection and defence against the increasing inroads of rapacious civilization. Thus the formidable houses with their Dutch strain, erected in Massachusetts by the Plymouth Pilgrims, used also by the Russian peasant in a not altogether dissimilar design.

The Crofter, with his pile of stones at the hillside, still remains in Scotland, and a dwelling of a like kind distinguishes the poorer parts of Ireland.

The mountain miner's cabin—surely the original of the frame house—rapidly erected and with its temporary appearance, becomes the pivot of a great city.

The birthplace Log Cabin of a President is very properly regarded with a clinging remembrance that outshadows entirely the glamour and claims of a White House. The gap between the two is filled—with an epoch.

Modern progress shows the bounding leap to the workman's cottage with all the utilities requisite for convenience and in a style of architecture at once attractive and desirable.

A deplorable earthquake produces a return to early and improvised forms of homes, which San Francisco recently had to rapidly put together.

The Harlem Flat and the Tenement House—abominations, both mere cubicles for perspiring humanity—should not be overlooked, as they cannot possibly be, nor should the single residence, regretfully disappearing from civic centers, as well as the mansions that are the developments of the ideas of comfort, of money, and, alas all too

often, we all must admit, of sheer vulgarity.

At last comes the Hotel, with a completeness and sumptuousness surpassing the dreams of even the most barbarous domiciliary splendors of the past. Equipped with every modern appliance, from Electric Hair Curlers to Turkish Baths. From a Kitchen that is a Laboratory, to works of art that are masterpieces, Lucullus lolls here in luxury; but the home, the rest, the haven and the tranquility—where are they all now?

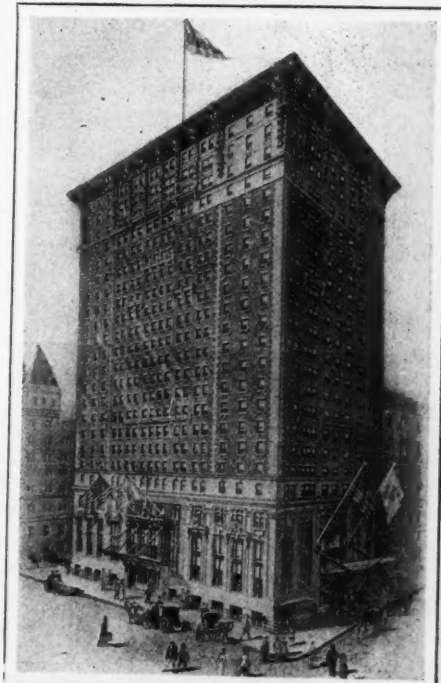
CHARLES F. RIDEAL.



A WORKMAN'S COTTAGE, ENGLAND



AN IMPROVISED HOME



THE HOTEL BELMONT, NEW YORK CITY

## CHICAGO'S ONWARD MARCH

**Toward Municipalization of Utilities—An Irresistible Movement—Powerful Corporations Engaged in Life Struggle—Vested Privilege Dies Hard**

By EDWARD F. DUNNE  
Mayor of Chicago

THE movement toward municipal ownership in Chicago, I believe, is irresistible and cannot be withstood. I am not, however, foolish enough to imagine that from this time on we shall meet with no obstacles.

Vested privilege dies hard. Amassed capital, when it runs up into the millions, has tremendous influence in all great cities. If municipal ownership wins in Chicago, as it will, it must win throughout the United States, and this involves tremendous consequences in the stock exchanges of New York, Boston and Chicago.

The public utility corporations of Chicago, including the traction companies, the tunnel companies, telephone, electric-light and gas companies of the city, are stocked and bonded for about \$395,000,000, \$170,000,000 of this tremendous aggregate being bonds, the remaining \$225,000,000 being stocks. There are 2,000,000 people in Chicago. Dividing this \$225,000,000 worth of stocks among these two million people would give \$112.50 worth of stock to each man, woman and child in the city. If this same proportion were carried out among the 80,000,000 people of the United States, there would be at least \$9,000,000,000 worth of stocks now held by stockholders of public utility corporations in the United States.

### CORPORATIONS DISCREDIT MAYOR

The tremendous accumulation of capital behind the public utility corporations of Chicago still have tremendous power. That power will be exerted in many dangerous and formidable ways. It will be used to bring about dissension among the friends of municipal ownership as to plans and methods. It will be used at the polls. It will be used in dragging across the path of municipal ownership the red herrings of immaterial issues. It will be used to discredit the Mayor and the Aldermen friendly to municipal ownership in every possible and conceivable manner. It will be used in the raising of false issues and false cries. It will masquerade in every possible disguise. It will be used in obstinate and protracted litigation. It will be used in attempting to discredit the securities which will be issued for the raising of money. It will pull every string in the banking world. It will retard, it is possible, the early realization of the people's project, but it cannot succeed in defeating the early acquisition of the people's aims and ambitions.

It can be no more successful *in the end* in Chicago than it was in Glasgow, or in any of the 142 great cities in Great Britain, which are now owning and operating their own street car systems. It has made the same fight in Great Britain, in Germany, in Austria-Hungary, in Switzerland and other countries that it has been and is now making in Chicago, but everywhere that opposition has been overwhelmed and overpowered and the onward

march towards municipalization will be as successful in Chicago as it has been in these other countries, and if successful in Chicago, as it will be, it will also be successful throughout the other great cities of the United States.

Charles E. Russell, who has been for months on the ground in Europe, speaks as follows of private ownership of public utilities there:

"Private ownership of public utilities seems doomed in Europe. The practical demonstrations are all against it. The most obvious trend of thought is surely destructive of it. Originally in the cities private ownership was the rule; in a few years it will be a rarely found exception. In European cities, at least, the people have fully satisfied themselves that they can do many things they formerly had done for them and do them better and more cheaply. That settles the fate of private ownership."

Thus does Mr. Russell speak of private ownership in Europe. The result is as certain in America. Private ownership of public utilities is doomed, and the man in public life who attempts to resist this onward movement will go down to his political death in ruin and disaster. This fact has been made apparent to many, and others must feel the force of the movement or be left far in the rear of the march of progress. The people in this country have been slow to appreciate the opportunity in this direction, but now that they have grasped the situation they will push it through to a successful conclusion. Chicago is in the van of the movement, but other municipalities are on the qui vive and will follow where the Western Metropolis leads.

### A City Beautiful

"He wanted a city beautiful,  
A city that should be fair,  
A city where smoke should never roll  
In billows upon the air.  
He wanted a city where art should be,  
A city of splendid halls,  
Where culture's touch should appear upon  
The battlements and walls."

"He called for a city beautiful;  
He shouted it day by day;  
He wanted a city where noise was not,  
Where the spirit of art should sway;  
He wanted a city that should be fair,  
Where filth might never be seen,  
And forgot, in spite of the zeal he had,  
To keep his back yard clean."

There's a change in Cincinnati, great improvements in our day;  
The streets' untidy litter with the dirt has passed away.  
We children pick up papers even while we are at play—  
And we will keep right on.

### CHORUS.

Glory, glory, Hallelujah!  
Glory, glory, Hallelujah!  
Glory, glory, Hallelujah!  
And we will keep right on.

No longer will you see a child fall helpless  
in the street  
Because some slippery peeling has betrayed  
his trusting feet;  
We do what we are able now to make our  
sidewalks neat—

And we will keep right on.  
And all the people far and near, in sunshine  
or in rain,  
Rejoice to see our cleaner street, and find  
the reason plain;  
We children take a hand to keep our thoroughfares so clean—  
And we will keep right on.

(Sung at the recent Street Cleaning Convention in Cincinnati, Ohio.)



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NEW YORK, SEPTEMBER 5, 1906.

## CONTENTS

Picturesque Parks Profitable By W. P. Heyl..... 217	Baltimore's Best Benevolence ..... 244
A Bit of American History. 221	"Fresh Bids"..... 245
Cities' Work in Beautifying. 221	Profuse Profanity ..... 245
Tree Planting in Cities By Richard Schermer- horn, Jr..... 222	The Way It Isn't Done.... 245
What Can be Done With Overhead Wires... 225	Municipal Supplies..... 246
The Artistic In Municipal Utilities..... 226	Tarviated Roads..... 246
Planning for City Beauty By Charles Mulford Robinson ..... 230	Modern Stave Pipe..... 247
Washington and Its Trees By M. Menet..... 232	Wood Block Paving By F. A. Kummer..... 248
Some Beautiful Bits ..... 234	Few Fireproof Buildings By F. W. Fitzpatrick... 249
The Disposal of Municipal Waste By W. F. Morse and W. Francis Goodrich.... 235	Metropolitan Items and Notes ..... 250
From a Bird's Nest to the Belmont By Charles F. Rideal... 240	Personals ..... 250
Chicago's Onward March By Edward F. Dunne.... 241	Some Unusual Fires..... 250
The City Beautiful..... 242	Notes—Querles— Correspondence ..... 251
Editorial	Trade Notes..... 251
Demands for the City Beautiful..... 243	ADVANCE WEEKLY
Municipal Artificial Stone. 244	CONTRACT NEWS 252
Merchants and Municipalities ..... 244	In the Market..... 255
	Book Reviews ..... 255
	A Compendium
	To Trap Automobilists... 256
	Affairs at Washington... 256
	Pledged Not to Bribe.... 256
	Legal Digest—
	A Summary and Notes of Recent Decisions..... 256
	Who's Who in Municipal Work ..... 256
	Patent Claims ..... 257
	A Directory of Municipal and Allied Societies..... 257
	Incorporations ..... 257
	Oil Engines for Pumping... 258

## EDITORIAL

### Demands for the City Beautiful

AMERICAN cities are earnestly striving after the beautiful, the artistic, and the attractive. Everywhere evidences of this can be seen, in public parks, in civic

centers, in improvement societies. But with this general demand for the city beautiful comes an appreciation—by the few, at least—of the lack of men able to advise and plan for the desired results. There are a few specialists in landscape architecture and park designing; a few architects with a genius in the grouping of buildings who can design noble civic centers; a few artists with the brush or chisel who can be relied upon to secure æsthetic effects in the designing and location of fountains, statuary, and other decorative appurtenances of a city. But who is to see that all these are not spoiled by numerous hideous blots in the shape of, say, red fire hydrants of ugly outline, stiff and obtrusive poles for supporting lamps and wires, cast-iron abortions of fountains, and the like? And if we develop specialists in this also, where is the small city to find the money to hire all these? And what if their several designs conflict artistically?

One solution would be the finding of some one man, or, what is more practicable, the formation of some firm or other cooperative body of men, who combine in themselves all the requirements for deciding such questions in an authoritative manner. Commissions have been employed by Boston, New York, Washington, and other cities, composed of the leading structural and landscape architects, sculptors, artists, and engineers; and similar action is recommended to all large cities. But the expense would be prohibitive to small ones. Unfortunately the citizens of this country have not at hand such beautiful examples to educate them in correct artistic principles as to the case abroad, nor is art so generally studied here. The difficulty referred to is therefore greater on this account. We suggest that to meet the emergency, cities form boards of municipal art, something after the nature of boards of health, who shall have authority over certain defined affairs, the scope of which can be increased as they prove their fitness and secure the confidence of the citizens. If these could be under the control of, and profit by the advice of State boards, the benefit would probably be still greater. A difficulty which would arise at the outset would be the selection of the members of these boards; for while physicians and sanitary engineers are accepted as proper material for boards of health, there seems to be but one profession generally available for boards of municipal art to draw from—architecture, which represents but one phase. But we believe this difficulty and others which would arise would be met in a wise fashion.

Whether or not such a plan be adopted, there is and will continue to be, a growing demand for specialists in this line. They will probably be graduates of art and architectural schools, who have spent post-graduate years in the study of municipal art in Europe and wherever it can be found. We predict that the first to qualify for this field will reap a rich reward; which will, however, be but slightly commensurate with the lasting benefits they will confer. They will be indeed worthy of the title of municipal artists.

### Municipal Artificial Stone

IN an eastern suburb of London, England, a borough called West Ham, the authorities have established an artificial stone plant for the purpose of manufacturing flagging stone, gully stones, etc. It turned out 67,117 feet super at a cost of 6.63 cents per foot, besides gully, etc., stones realizing \$5,240 about. The total cost of production amounted to \$4,655 about—this for the half year ending March 31st, 1906, which is a distinctly creditable showing. In the above figures, is included an allowance of 7½ per cent for depreciation of plant. The product is sold to contractors for private street work and to highways, at 8 cents per foot super. The department has also accumulated a stock on hand of no less than 270,601 feet super, so that it is ready—even more than ready—to meet any possible demands that may be made upon it. The chief object of the manufacture is, it would appear, to insure a definite, permanent, quality of material for paving purposes, as it is too often the case that a considerable variation in this respect occurs when the pavement is manufactured by a number of different firms, each one having its own formulism or standard. The West Ham method does away with such patch-work jobs, besides always placing the department in an absolutely independent position in regard to supplies. It would be interesting to have the returns from a similar department in some city in the United States. It should further be noted that the material is only sold to contractors for making up roads within the boundaries of the borough itself. It is not sold to outsiders.

### Merchants and Municipalities

THE still unsolved problem, as to whether the dog wags the tail, or the tail wags the dog, is likely to be supplemented by the equally puzzling one, as to whether the merchants move the municipalities, or the municipalities move the merchants. As a general rule, it has been conceded that the merchants, or business men, of all cities should have at least some oversight of them, outside of the mere elected executive heads and officials. Somebody or other, absolutely independent of politics and those that have been put in power by the votes of the people—an Association, Committee, Bureau, or whatever it may be called, if properly constituted, by level-headed local commercial men, who have interests at stake, to watch over—not necessarily always with a critical eye—the taxations, improvements and opportunities for bettering the cities they belong to, is all legitimate work for such a body to undertake. A pact of men like this has more at stake than any other class, and it fully recognizes that everything that can be done to facilitate or improve local business conditions means individually more to them. The cleaner and better the government is, the more attractive is it for the development of a city's commerce and population. There is a large num-

ber of such bodies in the United States who are variously and generally called Merchants' Associations, Boards of Trade, Chambers of Commerce, Trade Men's Societies, etc., and they are as a rule doing their work thoroughly and well. They bring to bear upon the pressing subjects of the time a broader view of things than a strictly municipal body is apt to do. The chief fault of such bodies is that of undue criticism of municipal officials, or untimely interference in their work, or what is still worse, the setting up of themselves in opposition to city officials and city government, creating an unpleasant and unsatisfactory division of parties and strength. They thus try again, using our simile, to wag the municipality. If such a thing is possible, there can be no better combination, for the general welfare of a city, than the getting together and working, in thorough harmony, of a body of independent merchants and elected municipal officials.

### Baltimore's Best Benevolence

NEARLY half a score of years ago, or, to be exact, in 1897, two ladies in Baltimore, and a handful of friends, established and maintained a couple of playgrounds for children, one for white and the other for colored. Here these kidlets romped and raced and roamed and really lived—for the very first time in their little lives—under the free and open of God's light and outside the limits of the shut up sun of the streets. Things grew and extensions were from time to time made, and the School and Park Boards, like sensible people, co-operated and allowed them the use of their school-yards and parks. In 1902, this energetic body maintained no less than twenty playgrounds—seven in parks and thirteen in school-yards—besides doing a material something towards the support of a swimming shore for the boys to slop about in. Then, after bathing and bulking out the bodies of these lads, they went for the bracing up of their brains, and got together a very attractive lot of circulating libraries. Notwithstanding the disastrous fire—even this could not quench the good work—there were in 1904, twenty-two such playgrounds, and now the Children's Playground Association—for that is its full and due title—has a regular training class for its playground directors, and issues an annual report in a style and manner that needs only to be seen to be imitated. Strange as it may seem, all the officers are women—think of that—and they run the affair as though they were born to it, and with an enthusiasm that threatens to embrace every stray kid, male or female, in the city, that has no place to play, or to fill out its little lungs in. All sorts of educational games are provided. The children are thus learning useful occupations of different kinds, from braiding baskets to cooking cake, and the funny part of it is that they don't know that it is work, because it is all done as play. Miss Janet Goucher, the treasurer, in a businesslike statement, shows that \$3,011.63 came in during 1905, and that \$2,870.47 went out in the same period, leaving \$141.16 up the treasurer's sleeve



to be carried forward. If this is not creating civic betterment, or not making for improvement, moral, physical and financial, with a vengeance, then all the platform platitudes and stuff that has been written have been in vain. Every Baltimorean who possesses even the shade of a shadow of a suspicion of a spare dollar about him, should be held, heels up, until his money is shaken out of his pockets into the Association's cash box and a playground—all power to their increasing numbers—established at every second block or so throughout the whole city. These made-happy little human units, thus so pleasantly and practically taken care of, are themselves going, some day—thanks to this association—to be the builders of a Baltimore both bigger and better, and more beautiful, than ever.

#### "Fresh Bids"

How frequently is noticed the announcement from various city departments, either of "fresh bids" being asked for, on account of the previous ones—if there are any obtained at all—being too few or unsatisfactory? The cause of this is that the local newspapers, in many instances, although excellent media in themselves, do not reach the larger and outside contractors. The consequence is that bids are often, in this way, overlooked—particularly so if the commissioners or others responsible for the letting of the contracts, do not themselves send out as "news items," which are always acceptable, the details and dates of such bids to a representative publication, say like the MUNICIPAL JOURNAL AND ENGINEER, which specially covers the field of civic utilities of all kinds. Naturally, this paper reaches the larger and more competent contractors, who specially cater for this class of business. The contract news of this journal—the largest and most comprehensive in its line—is obtained at much expense and more trouble, by and from correspondents all over the United States, and therefore, very little escapes the editors of it. It is, however, more than galling to find that every now and again local officials send out their news, sometimes as long as fourteen days after it has been chronicled and dealt with in our contract columns. The remedy is, of course, to advertise, not only in the local field, but in the larger field of a journal that directly caters to municipal and public service enterprises. A hundred or two dollars would be well spent in this way, and may probably save many a city many times the amount in a single contract, by thus reaching a class of manufacturers and suppliers who would only be too willing to estimate for the work if they only knew what and where and when it was wanted. If the laws do not provide for such additional advertising, they ought to be amended and made adaptable to meet such cases. In any city, say of 20,000 people, desiring to give out a paving contract amounting to, perhaps \$60,000 is there, as a rule, one local firm suitably equipped or fitted to do the work? The same principle applies to water, gas, sewerage and electric plants, all of which use up large sums of money. A city should make for the fullest and fairest

field, and thus obtain the utmost value for its money. It cannot do this without making its wants known, and the best way to make them known is to broadly advertise them in the right publications.

#### Profuse Profanity

THE Mayor of New Richmond, Wis., Colonel S. A. Hawkins, says that "Every community has as good a right morally and legally to protect themselves and their children from the pollution of the profaner as they have to guard themselves against the contagion of scarlet fever, smallpox or any other contamination." His Honor is perfectly right. A few moments of time spent at any street corner, or on the ferry boats, entrances to offices and theaters and other buildings, will convince anybody, almost even a nonobservant, of the large amount of vile and filthy epithets used, even in apparently ordinary conversation, by the lots of unthinking blackguards who congregate in such places. Against the healthy, clean, emphatic and perhaps indignant "damn" it would be affectation to protest, as there may be, and invariably is, an excuse for the use of the term under such conditions, but for the average and disgusting layout of swear words indulged in there is none. The statutes of Wisconsin provide liberally for such infractions of morals and manners by a penalty of not more than three months in jail or by a fine not exceeding \$100. Colonel Hawkins very properly says he will see that the penalties are enforced in his city.

#### The Way It Isn't Done

THE city of New York is to be congratulated on one thing at least, and that is the erection of the new Williamsburg Bridge, which is a fine piece of work of unusual usefulness and benefit to the people on both sides of the river. The entrance to the bridge on the New York side of it has been the means of clearing away many blocks of reeking rookeries, whose removal has made for health and improved morals. The letting in of the daylight in such infested centers does more for the well-being of their inhabitants than all the regulations and laws that man, in his imperfect wisdom, ever constructed or passed. This locality was formerly a particularly loathsome one, and even now it is capable of vast improvement. So far so good. Now for another side. In making the opening, a large number of vacant spaces have been created. Instead of the city continuing its good work and utilizing these spaces by planning them out into rest spots, covering them with turf, providing them with plenty of seats and both ornamental and drinking fountains, as well as a few hundred shade trees, and thus in the very midst of a densely populated district providing a handsome set of parklets or boulevards—a very Godsend to the people apart from the improvement to the value of the adjacent real estate—there are to be seen a series of untidy, soil lots, each piece carefully guarded and surrounded by cheap, dinky looking iron fencing that would disgrace a horsepound, whilst the children and other residents, with several acres which might be theirs to sport and exercise in, fill the streets and the gutters. The city goes on and through indifference cannot see it. This is the way things are not done.

## MUNICIPAL SUPPLIES

### Proposed Interesting Exhibit in Connection with the Annual Convention of the American Society of Municipal Improvements

ONE of the most interesting features of the Montreal convention of the American Society of Municipal Improvements last year was an exhibition in relation thereto of various materials which are used in connection with street paving and grading, sewerage, water supply, street lighting and other municipal utilities. This exhibition, the first which the society attempted, was handicapped in various ways, but was considered to be so great a success, by both the corporate and associate members, that the former authorized its repetition this year, and the latter were enthusiastic concerning the benefits which they believed they would derive from it:—Associate members are those who are manufacturers or dealers in supplies. The Convention, which will be the thirteenth annual of the Society, will be held at Birmingham, Ala., October 9. A committee consisting of the following was appointed to arrange for this year's exhibit: Corporate members: Geo. W. Tillson, Secretary of the Society, Brooklyn, N. Y.; M. R. Sherrerd, Newark, N. J.; C. H. Rust, Toronto, Ont. Associate members: T. H. Blair, Northboro, Mass.; E. J. Snow, Brooklyn, N. Y.; R. K. Davis, Detroit, Mich. Julian Kendrick, Birmingham, Ala., is the local member of the committee. This

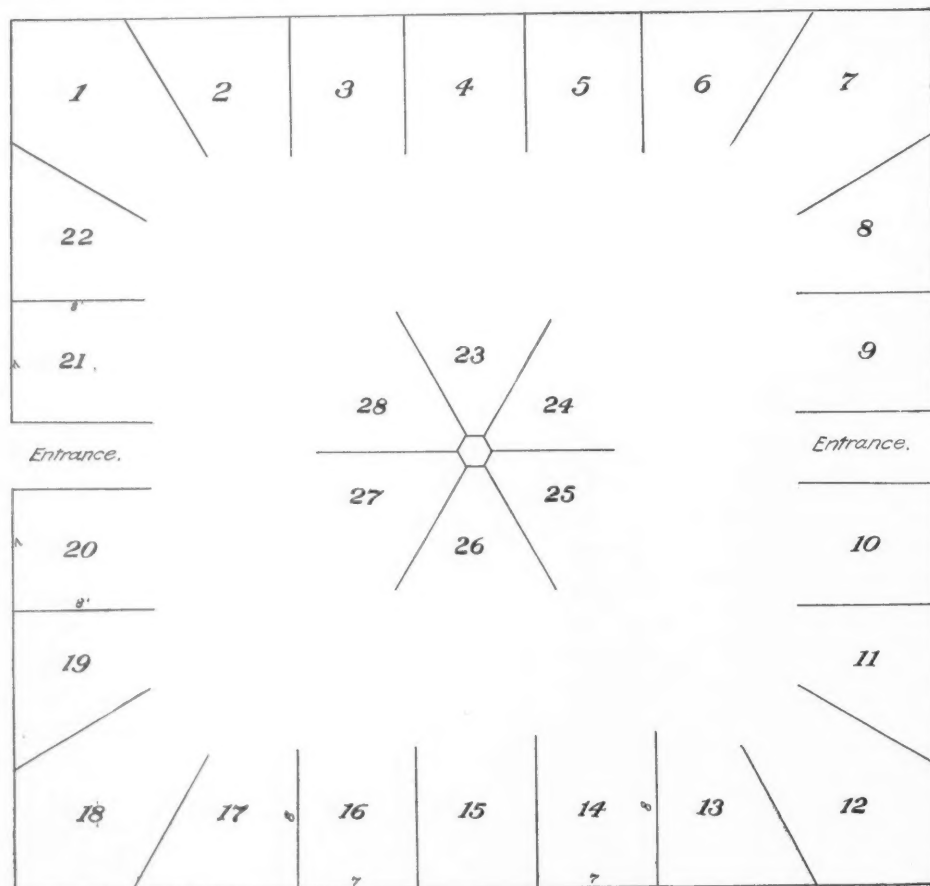
committee has taken up the work of securing exhibitors and caring for them at the convention, at the least possible cost to them. It is proposed to decorate the hall, divide it into booths, provide lights, and do everything in general in the way of preparation which can be done. The expenses to exhibitors will be confined to the actual cost of getting their exhibits into place in the hall, preparing whatever signs they wish (within restrictions as to size, location, etc., and the membership fee in the society)—all exhibitors must be members of the society. The price for exhibition space will be fixed at the lowest rate which will cover these general expenses.

Herewith is a diagram of the hall, showing the arrangement of the booths. Further information will be cheerfully furnished by the Secretary of the Committee, Robt. K. Davis, Hammond Bldg., Detroit, Mich.

### Tarviated Roads

THE use of a special coal-tar composition known as Tarvia for the laying of dust, is said to be yielding gratifying results. In a series of recent experiments conducted under Federal supervision at Jackson, Tenn., the government reports that this new method gives promise of doing away with the dust nuisance at an expense that will allow of its being used generally on macadam roads throughout the country. For several years past good work has been done along these lines in France, where hundreds of miles have been successfully treated with tar. Recently a number of similar experiments have been conducted in the vicinity of New York City, at Montclair, N. J.; New Brighton, Staten Island; Stamford, Conn.; and at Oyster Bay, Roslyn, and Long Island City. Washington, within the last ten days, has witnessed similar experiments in its suburbs, and satisfactory results have been secured at all points.

A street treated with Tarvia is claimed to be dustless in the same sense that an asphalt street is dustless, although in both cases a fine, sandy powder wears off. This may be swept away or the streets washed clean at small expense, without damage to the tarviated macadam. Other arguments advanced in its favor are that as the stones are bound together so strongly by the tar, they are not torn up by the cleaning that invariably ruins an ordinary macadamized road. Application of tar is advocated also because of its antiseptic properties, which make it beneficial, both as a means of insuring cleanliness and as a germicide. Lessened vibration and noise is also noticeable.



EXHIBITION HALL—AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENTS  
(Diagram Showing Arrangement of Booths.)



## WOODEN STAVE PIPE

How It Is Laid at Comparatively Small Cost—A Substitute for Iron—Method of Construction—Results Attained

CONTRARY to popular belief, the use of wooden stave pipe did not originate in the West. As early as 1874, a line of stave pipe was built at Manchester, New Hampshire, and this is still giving satisfactory service. We are indebted to engineers of the West, however, for the improvements that have been made in this construction.

On account of excessive freight rates and lack of raw material, the people of the West were forced to develop some substitute for cast-iron pipe. Wooden stave pipe was tried, and, under the conditions which warrant its use, gave entire satisfaction, and at about one-half the cost of cast-iron pipe. At first, wooden stave pipe was used only where lack of funds prohibited using cast-iron pipe, but its continued good service has proved its value and it is now used entirely on its merits, which are claimed to be as follows:

Wooden stave pipe costs less than any other pressure conduit now being used, when the diameter is considerable, and, except under certain conditions, has an advantage in freight rates.

Because of its smooth interior surface, the friction or resistance to flow is comparatively small; therefore it will carry more water to the same diameter than any other kind of pressure pipe.

Its inside surface does not pit or corrode as in the case of metal pipe; therefore its discharging capacity remains the same after years of service, as when first installed.

It may be bent to the curvature of the ground, both horizontally and vertically.

Electrolysis does not affect wooden pipe. If properly designed and operated, its life is claimed to be between forty and fifty years.

One objection to this pipe, but under certain conditions only, is that the softness of the staves limits the pressure under which it can safely operate to about 200 foot head. On account of the indeterminate strains due to water hammer, its use in distributing systems is not recommended. It is generally used for gravity supply main, pump supply main, penstocks in hydro-electric plants, and outfall sewers.

### METHOD OF CONSTRUCTION

The materials for the pipe are delivered in the "knock down," assembled along the line of trench, and finally put together in the trench. The flat sides of the staves are milled to the true inside and outside radius of the pipe and the edges beveled to radial planes. They are cut off square at the ends and each end is slotted to allow the insertion of a metallic tongue. The slots should be cut with great precision, for, to insure a continuous smooth bore, they should be in exactly the same position for all staves. If slots are cut too deep, a "leaky" pipe will re-

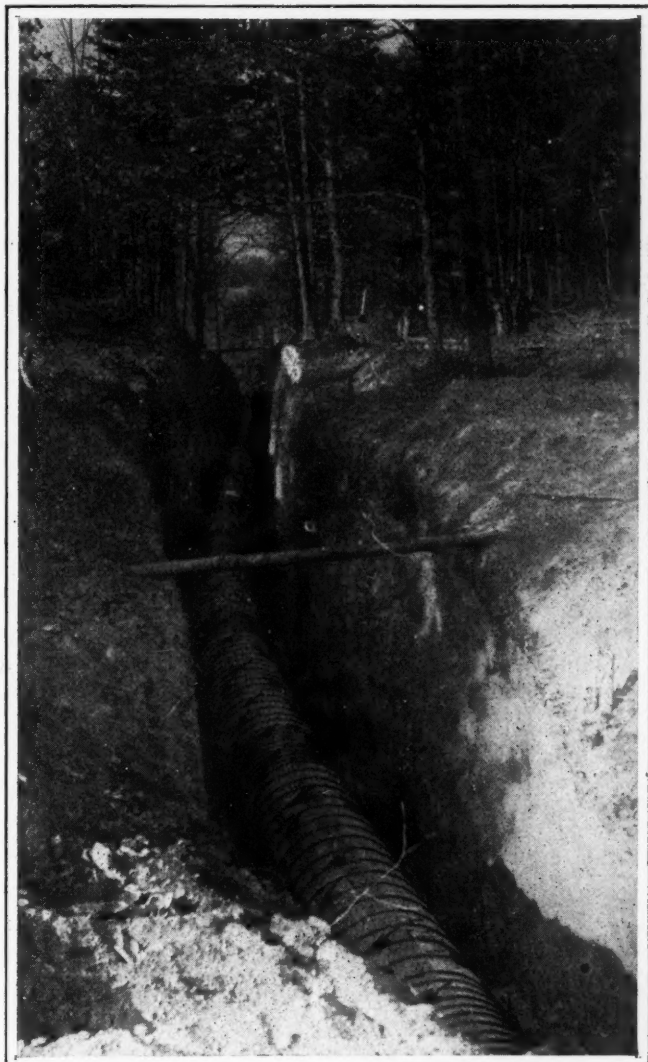


FIG. 1.—MAIN SUPPLY PIPE, GRAVITY WATER SYSTEM, LYNCHBURG, VA.  
(This pipe-line is 18 miles long.)

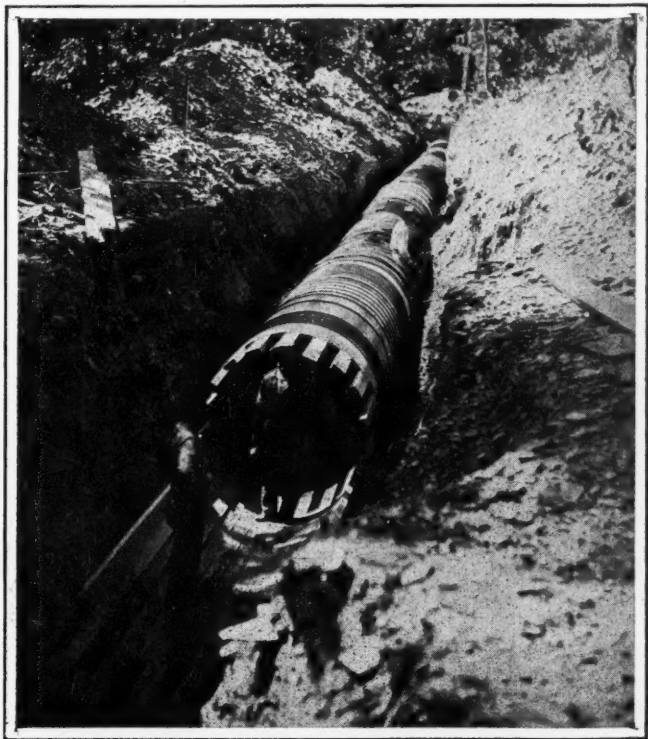


FIG. 3.—VIEW OF 60-INCH PIPE-LINE FOR WATER-POWER DEVELOPMENT NEAR ITHACA, N. Y.

sult; if too shallow, the ends of the staves will split in "driving up" the butt joints, resulting also in a "leaky" pipe.

Inside and outside forms are used in laying the staves into the pipe; each stave projects beyond its fellow from 24" to 36"; bands are placed around the pipe, those over the butt joints brought to firm bearing, and the staves then driven back by means of wooden driving bars, thus tightening and completing the butt joint. Finally all the bands are brought consecutively to the proper tension, tightening seam joints, when the pipe is ready for use.

Well manufactured material and careful workmanship are necessary in a successful wooden pipe installation.

#### PIPES IN THE EAST

At Lynchburg, Va., a line of 30" wooden pipe, about 18 miles long, is nearly completed. This is the main supply pipe for the new gravity waterworks of the city, greatest pressure about 210 foot head.

Greensboro, N. C., has nearly finished the construction of about 7 miles of 18", 20" and 24". Some 4,000 feet of the line is to be used as force main from pump at intake to reservoir, and the balance of the line as gravity conduit from reservoir to the city, greatest pressure about 160 foot head.

Near Duluth, Minn., are being built three lines of 7 foot diameter pipe, aggregate length 2½ miles, as penstocks for the Great Northern Power Co. Greatest pressure about 165 foot head.

In 1904 four hundred feet of 60" wooden pipe was installed in connection with the water power development for Cornell University, near Ithaca, N. Y. During the same year 600 feet of 48" wooden pipe was put in by the Woodlawn Cemetery Co., of Baltimore.

This pipe is being used in Mexico and South America. A line of 22" pipe 5,000 feet long was built for the Cerro De Pasco Mining Company, in Peru last year.

In all the above, California redwood was used. It is considered by the builders to be the wood most suitable for pipe construction.

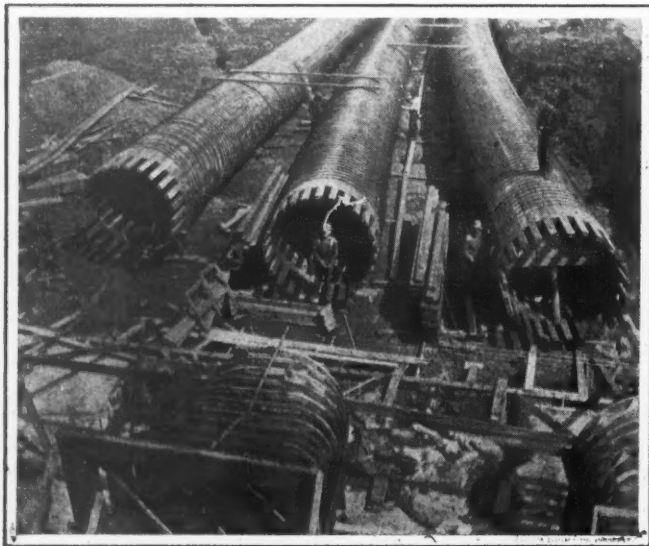


FIG. 2.—PIPE LINE, 2½ MILES LONG, NEAR DULUTH, MINN.  
Great Northern Power Co.

## WOOD BLOCK PAVING

### Developments in Industry in Recent Years—Views of Engineers and Laymen—General Conditions of Work—Specific Cases

By F. A. KUMMER, Member of American Society of Civil Engineers

IN the inception of the wood block idea in the East there existed two sources of information and experience upon which the engineer could draw in his efforts to find the best. One of these lay in English and continental cities where wood block had been successfully laid for years upon streets of the heaviest travel. Engineers and laymen speaking of these pavements, as a rule, referred to three general conditions. First, that the English pavements were better because they were laid on excessively heavy concrete foundations, running in some instances up to 12 inches in depth. It is certainly the better engineering construction to lay foundations of no greater depth than the conditions require, and if four inches or five inches or six inches of concrete is amply sufficient to carry the loads passing over the street, what could be gained by increasing the concrete depth and also the price of the pavement to no purpose? It therefore became apparent that wood pavement required no greater depth of concrete than any other form of pavement.

Second, the prominent feature which was brought forward in connection with the foreign pavements was the use of hard woods from Australia, known as the Karri and Jarrah woods. It was found upon investigation that these woods were by no means used in the majority of instances abroad, that they were laid untreated, were open to the serious objection of a portion of the blocks at least decaying, and made a paving surface so hard and slippery that horses with difficulty obtained a foothold on them unless the pavement was constantly sprinkled with sand or crushed stone. On the other hand, the laying of such soft woods as Norway pine, either dipped in creosote oil or treated with about 10 pounds to the cubic foot, did not seem to be a scientific solution of the wood paving problem, and it became evident that better results would be obtained from long leaf yellow pine, which, while harder than the Norway pines, is still not so hard as to be unduly slippery and is susceptible of a complete treatment with preservative material, by which is meant a treatment throughout the entire mass of the block.

#### JOINT BETWEEN BLOCKS

A third fact which an investigation of these pavements brought forth was that the blocks were almost universally laid with a joint of from ½ to ¾ of an inch between them. Why this practice was adopted I do not know, unless it was with the idea of allowing untreated or insufficiently treated blocks to expand, but this could hardly have been the case because these joints and the surface of the pavement itself was so liberally filled and covered with paving pitch and gravel that the resulting pavement resembled very much a tarred roof through which no water could readily penetrate. This method of laying the block, espe-



cially with Australian woods, provided a better foothold for horses because the joints of the block rounded off under travel, producing a sort of cobble stone effect. This method of laying was also discarded in investigating the subject, and it was decided to lay long leaf yellow pine blocks thoroughly treated throughout on a concrete bed of moderate depth, with tight joints, the block being so filled with a preservative material that water could not enter and cause expansion, and for this reason no joint was used between the blocks other than fine dry sand. It was thought, and events have proven it correctly, that the rate of wear in Georgia pine properly treated was so small from year to year that blocks of a moderate depth of four inches would be sufficient for the most extreme conditions, and this has since been reduced to  $3\frac{1}{2}$  inches and in some instances 3 inches. The English practice, on the other hand, was to use blocks 5 to 6 inches deep and in some cases even more. It is with some satisfaction that we note that the English practice is now being modified, tending to the use of a shallower block laid with tight joints.

After securing this information, the laying of wood block in the western part of the United States, notably at Indianapolis, was looked into, and here it was found that while Georgia pine blocks on six inches of concrete were successfully resisting wear, they had in many instances swelled badly and were almost invariably laid with a heavy pitch expansion joint along the curb to obviate this difficulty. The absorption of water by these blocks was due to two causes. First, insufficient treatment, and second, treatment with ordinary commercial creosote oil. This, it was felt, could be remedied by increasing the amount of treatment from 12 to 14 pounds per cubic foot, to 22, and combining with the creosote oil some highly waterproof material, such as melted rosin, to seal up the pores of the wood and prevent both the absorption of moisture and the leeching out of the oil. It was on this basis that the present successful wood block pavements in the East were first laid.

## FEW FIREPROOF BUILDINGS

Annual Property Loss Mounts into Millions—Insurance Companies Reap Harvest—Fire Fighting Expensive—How the People Lose

By F. W. FITZPATRICK

THERE are 11,500,000 buildings in the country, valued at \$14,500,000,000. Of that number only 4,000 are of fireproof construction, and that only in so far as the skeleton framework is concerned. All of them can be damaged from 30 to 90 per cent. in a conflagration; the others can be totally wiped out of existence by fire, and the country seems hard at work at the job. The year 1905 saw \$500,000,000 of new buildings put up. But \$200,000,000 damage was done by fire, and that in a "normal" year. Plus that \$200,000,000, attempted fire-prevention in the way of Fire Departments, water, etc.,

cost us \$300,000,000. The average business man seems imbued with the fool idea to gamble with insurance companies and take the risk of letting his property burn and being reimbursed by them, rather than building indestructibly in the first place. The sum of \$95,000,000 in 1905 was got back from the insurance people. But note that the fires cost \$200,000,000 in destruction and smoke; \$300,000,000 for fire fighting and, above and beyond that, \$195,000,000 paid to the insurance companies in premiums during that same period of time.

There is but one absolutely fireproof building in the country, the Board of Underwriter's Laboratory in Chicago, that cannot be damaged over 2 per cent., even in the fiercest conflagration. Yet it cost but 12 per cent. more to build than the ordinary flimsy structure. This year the country is building \$725,000,000 worth of buildings. But, including San Francisco, the lowest estimate of destruction is \$500,000,000 for the year. That one fire wiped out 2,381 acres of city, 20,000 buildings at least, and 80 per cent. of the property value of the city before the fire, or, in money value, \$315,000,000, went up into smoke, \$1,000,000,000 was lost in business to the city and to the country, and it will take \$350,000,000, twenty years' time and \$12,000,000 to clean up the debris before the city will be anywhere near itself again. For all of that loss the people may get back \$135,000,000 from the insurance companies.

To build thoroughly fireproof buildings now means some additional expense because the conflagration risk is so great all about. If everyone had built sanely, there would be no occasion for this expense; incombustible buildings would simply be required. Yet even though the expense may be greater, the only way the permanency of a structure can be assured is to build it *absolutely* fireproof. Building requirements should be more exacting; insurance rates upon fire-traps should be prohibitive; taxation upon property should be graduated. As it is now, the more a man spends, the better he builds, the less protection he needs from the municipality, the greater the tax he has to pay. It should be that if one so builds as to require the minimum of protection from the city, his tax should be lowered, while the one who builds a fire-trap or maintains one, requiring the maximum of protection, should be made to pay a commensurate tax, the maximum.

## Dickens and Fire Alarms

The fire alarm box with the glass front, which may be quickly put into operation, but which may not be tampered with until the glass is broken, was suggested by Charles Dickens, though, perhaps, few persons are aware of the fact. His idea was not the using of a glass door for a fire alarm system, but in a cabinet for the keys of his study, so that they might be quickly secured in case of fire. At the same time, the keys could not be obtained without leaving evidence in the shape of a broken glass. The value of the idea was grasped by some more practical mind, and the glass-fronted box, now used practically all over the world, is the result of the great author's fear that a fire might threaten his manuscripts at a time when he should be away from home.—*Exchange*.

**Metropolitan Items and Notes.**—After all, there have been no ice indictments found. Never mind, better luck next time unless the city installs a series of plants of its own. The subject has grown cold.

Mr. Commissioner Woodbury asks for \$913,000 more. Why not have evened it up to a level million? Let us see, isn't there a report lying around somewhere?

More municipal ferry boats is the demand just now. This time between the Battery, Manhattan, and Thirtieth street, over to Brooklyn. Why not abolish all the Arks at one swoop and be done with them?

Isn't it about time that the report of the municipal investigators who went abroad a while ago to see how things were done there was presented? Hurry up, please.

The Comptroller recently gave a few short, sharp, terse expressions of his opinion of the Municipal Civil Service Commission for permitting the name of a crook to slip into the "eligible" list. There are certain things that Mr. Metz will not let pass.

Eight hundred and six babies' lives, it is estimated, have been saved in ten weeks by better care and treatment. This is the statement of the New York Association for Improving the Conditions of the Poor. A splendid showing of a work not appreciated one-hundredth part of what it should be.

Someone has suggested dump cars for "kickers," so as to save impeding the traffic and give the police a chance to sleep. Who ever questioned a policeman's ability to slumber?

The cry for a better quality of water is increasing in New York City. In taste, smell and color it is abominable.

The Bridge Commissioner has given out some interesting figures regarding the four bridges of the city., viz., Brooklyn, Manhattan, Williamsburg and Blackwell's Island. 363,056 surface cars passed over the first named bridge during the second three months of the year. Yet even with this there are rush hours.

Mosquitoes are merrily materializing at Bath Beach and the residents there don't like them. Our old friend the "garbage dump" seems to be responsible.

Mayor McClellan, it is reported, has been investigating Municipal Ownership in Germany and doesn't approve of it. His Honor can hardly claim to be an authority on the subject after a look over of about as many days as Germany has been years engaged in profitably conducting such work. We want more evidence on a thing of this kind than a mere passing vacation say so.

Two hundred and sixty-seven pages of a report on waste of water in New York City is issued by the energetic Merchants' Association. There is a big leakage somewhere. Of this there can be no question. The remedy appears to be to meter the supplies.

The Croton reservoir contract for \$3,028,853, to impound 14,000,000,000 gallons of water, if properly carried out, should do something toward assuring people that there is no sign of an immediate thirsty time coming. Get the water cleaner would appear to be the necessity. Quality first, quantity afterward.

## Personals

BANCROFT, WILLIAM P., of Wilmington, Del., recently made another liberal gift of land to the city for park purposes, consisting of a tract extending from Gilpin avenue and Clayton street to the boundary, a portion of which was but lately purchased by the donor. It will prevent the encroachment of dwellings too close to Brandywine Park. The lot is valued at over \$12,000.

BIDDLE, JOHN, Colonel of Engineers, U. S. Army, Engineer Commissioner of the District of Columbia, spent a few days at Indianapolis, and is now enjoying the remainder of his vacation at Hot Springs, Va. Commissioner H. B. F. Macfarland, President of the Board, recently returned to Washington after a vacation trip in Europe.

BRADBURY, E. G., of Columbus, Ohio, has submitted plans for water and sewerage systems for the city of Medina, Ohio, which will involve an outlay of \$70,000. There will be 38,000 feet of sewers constructed.

BUCHENHAM, H., landscape engineer, of New York City, who drew the plans for the magnificent Vanderbilt estate near Asheville, N. C., and the J. B. Duke estate in New Jersey, and recently, for the improvement of the campus at Trinity College, has been engaged to make plans and specifications for improvements at Greensboro Female College, at Greensboro, N. C., which will make the institution perhaps the most beautiful in the State.

CHANCELLOR, DR. WILLIAM E., the newly-elected Superintendent of Schools of the District of Columbia, has received a letter relative to constructing certain new buildings from Engineer Commissioner, John Biddle, these two officials, with the Supervising Architect of the Treasury, having been named as a committee to have charge of the matter.

COLE, DR. WILLIAM H., Health Officer of Jersey City, N. J., recently visited Cincinnati and Cleveland, O., and Indianapolis, Ind., to investigate the methods of procedure of the local Boards of Health. In Indianapolis he was entertained by Dr. Eugene Buehler, Secretary of the city Board of Health, and Dr. J. N. Hurty, Secretary of the State Board of Health.

COSBY, SPENCER, Captain of Engineers, U. S. Army, officer-in-charge of the Government works in Washington, D. C., and vicinity, has been detailed by the Secretary of War to take charge of the construction of the piers to be built in connection with the Jamestown Exposition, near Norfolk, Va., for which Congress has appropriated \$400,000.

DAVIS, OTIS FRANK, a member of the Wichita, Kan., Fire Department, is quite an artist, and devotes his spare time decorating the walls of Hose House No. 4, where he is on duty, with landscapes, hunting and camping scenes, marine views, and sketches of other kinds in colors, with the exception of fire scenes.

HERVEY, CHARLES S., has been named by Comptroller Metz, of New York, as Chief Statistician of the new Bureau of Municipal Statistics, at \$6,000 per year; Jacob S. Van Wyck, former Deputy Receiver of Taxes in Brooklyn, Expert Accountant, \$4,000 per year; George W. J. Angell, former Assistant Secretary of the Merchants' Association, Expert Accountant, \$4,000; William J. McKenna, former Chief Clerk of District Attorney Jerome, Expert Accountant, \$3,500; James S. Regan, Auditor, \$4,000. Thomas F. Wogan is appointed Deputy Receiver of Taxes in Brooklyn at \$4,000 a year.

JOHNSTON, J. P., General Sales Manager for the Weber Steel Concrete Chimney Company, Chicago, Ill., has resigned to become Sales Manager of the Water Tube Boiler Department of the Atlas Engine Works, Indianapolis, Ind.

KRAUSE, L. D., has donated \$1,500 toward beautifying the new park of Allentown, Pa.

## Some Unusual Fires

ASHTABULA HARBOR, OHIO.—Business section burned, August 26. Cause unknown. Damage, \$75,000.

BESSEMER, TENN.—Tennessee Coal, Iron and Railroad Company's powder house burned, August 25. Cause, lightning. Damage, \$25,000.

CHICAGO, ILL.—Paint factory of John Lucas partly burned, August 23. Thirteen firemen overcome by smoke or injured by explosions. Cause, spontaneous combustion. Damage, \$65,000.

FRANKLIN, PA.—G. A. Collins' "gospel tent" burned, August 24. Cause, sparks from bonfire. Damage, \$800.

HOUGHTON, MICH.—Big pavilion at Electric Park burned August 18. Cause unknown. Damage, \$5,000.

ST. LOUIS, MO.—Music store of Jesse French, No. 1114 Olive street burned August 28. Cause, defective wiring. Damage \$7,000.

ST. PAUL, MINN.—Plant of American Can Co. and Heinz Pickle Co. burned, August 28. Cause unknown. Damage, \$350,000.



## NOTES—QUERIES— CORRESPONDENCE

Editor MUNICIPAL JOURNAL AND ENGINEER,  
Flatiron Building, New York City.

DEAR SIR:—I have noticed in discussions of the subject of the pollution of New York Bay, that in the event of the emptying of a sewer from Passaic drainage area into the harbor, lawsuits may result. New York, as well as Boston, may take a lesson from Paris where the inhabitants of the suburbs have formed a syndicate to sue the city for damages for the pollution of the Seine. This litigation has already reached a stage where the city's liability for damages has been admitted. Why should not the citizens living on the shores near Boston or New York sue those cities in like manner? Nature has done her best for Boston, in providing it with a land-locked harbor of one hundred square miles. In the center of this parklike expanse of water, is a river of sewers emptying daily a hundred million gallons of putrid nastiness which floats about with every tide, to the disgust of everybody in the vicinity. At the gateway of the harbor, on the north side, there is another river of filth. This is the North Metropolitan sewer, emptying fifty-nine million gallons; on the south side of the harbor twenty million gallons are emptied into Quincy bay. While these sewers are great engineering works and benefit the people living inland, their work is incomplete, and those who live on the shores may protect themselves from damage by compelling the cities to purify their sewage by an appeal to the courts. Very truly,  
P. A. F.

Editor MUNICIPAL JOURNAL AND ENGINEER,  
Flatiron Building, New York City.

DEAR SIR:—I have been interested in reading Mr. Gus H. Hanna's suggestion, made in your columns, that an international organization of the heads of Street Cleaning Departments should be formed. I would gladly favor such an association if I thought there were a sufficient number of chiefs of Street Cleaning Departments to make a successful organization. It seems to me that in a good many instances the chieftainship of the Street Cleaning Department would be a matter in dispute. I am afraid a great many cities, not the least among them my own, might present a contested delegation. The man who does the street cleaning in some cities has no title or legal standing like the chief of the fire and other departments. The Superintendent of Streets often has charge of street cleaning as well as paving repairs and many other matters. In smaller towns he would no doubt be the proper person to represent his city. In such cases, however, he is a member of other municipal organizations, and would not care to join a new one that concerned itself with only a part of his duties. The financial side of the question of organizing a society cannot be overlooked. For a small society, the expense per capita must be large, decreasing rapidly as the membership increases. It would be interesting to hear from Mr. Hanna regarding the probable membership and the dues. Very truly,  
M. C.  
Boston, Mass.

Editor MUNICIPAL JOURNAL AND ENGINEER,  
Flatiron Building, New York City.

Dear Sir:—I am interested in your reviews of books opposing municipal ownership, and I inclose \$1.60 for Professor Meyers "Municipal Ownership in Great Britain." I am glad to see that the people who write books are opposed to the proposition, and that only newspaper writers, who surely don't know as much favor the plan. My town contains a good many people who want the city to run everything, and I am glad the court wouldn't let them build the brick plant they wanted to put up for making paving brick. The only advantage there could be would be to give their M. O. asphalt plant some competition, which it needs. All I can see to municipal ownership is bigger salaries for the men who run the town. If they showed as great mental acumen in running the municipal enterprises as they do in scheming to magnify their office, it would be better for the enterprises. It seems very queer that whereas no one has ever noticed any conspicuous bashfulness on the part of city officials in claiming merits for what they do, very little is known about municipally run trades. Looks as if they wouldn't stand much investigation. Experts who have studied the matter say there are hundreds of such commercial operations. How can that be so, if they are any good? Surely the story would have been told long ago, if it were true. I believe as one of your correspondents does that a private corporation can give any enterprising city cards and spades and beat it. However, in all seriousness, if there is anything in this proposition, the men who have worked on or had charge of such work ought to make themselves and their successes known.

Yours truly,  
INDIVIDUAL INITIATIVE.

Detroit, Mich.

## Trade Notes

A MODEL TOWN.—Kinkora, one of the most recent towns built by an industrial corporation for the use of its employees, is likely to be one of the most successful on account of the sound common-sense principles on which it is being conducted. John A. Roebling's Sons Company needed room for additions to its works and its men needed houses to live in. Hence the company acquired some waste land near Trenton, N. J., and is building upon it. The village will have wide streets, 80 to 100 feet, the houses will be of brick, and everything that goes to make up a modern town will be provided. While the company will own houses and stores, there will be no paternal regulations, no store orders, and the townspeople will be free to spend their money where they please.

ARC LAMPS.—The Stanley G. I. Electric Manufacturing Company, Pittsfield, Mass., in Bulletin No. 618 describes types L4 and L14 arc lamps using 100 to 125 volts multiple direct current. This style of lamp is adapted for indoor use, especially in rooms with low ceilings, as the enameled reflector is only 15½ inches long.

CANADIAN POWER PLANTS.—Important developments in supplying the cities of Montreal and Quebec with electric power from hydraulic plants have been undertaken. The Montreal Light, Heat and Power Company will develop power at Seulangues Rapids, forty miles up the St. Lawrence river. Three 3,750 k.w. generators will be coupled direct to an equal number of 5,350-brake-h.p. turbines. The draft tubes for the larger units will be moulded in concrete—the first construction of its kind in Canada. The Quebec Railway, Light and Power Company will build an 85-foot dam on the Montmorency river, half a mile above the falls. The hydro-electric equipment in both plants will be supplied by the Allis Chalmers Company.

CEMENT.—*Cementology*, issued monthly by the Whitehall Portland Cement Company, Land Title Building, Philadelphia, contains, in the August number, directions for testing cement. The instructions given are those recommended in the report of the committee on uniform tests appointed by the American Society of Civil Engineers.

FOUNTAINS.—James B. Clow & Sons, 11 Broadway, New York City, issues a handsomely-illustrated catalogue of its fountains; they are made in standard shapes and sizes, suited for parks, boulevards, public squares, private estates, schools, public buildings, institutions, theaters and railroad stations.

LANDSCAPE ARCHITECTS.—Mr. James Sturgis Pray, continuing the business of the firm of Pray & Gallagher (from which firm Mr. Percival Gallagher has withdrawn), and Mr. Henry Vincent Hubbard and Mr. Henry Preston White, heretofore constituting the firm of Hubbard & White, have announced that they have entered into partnership under the firm name of Pray, Hubbard & White for the professional practice of landscape architecture. Messrs. Pray, Hubbard & White will occupy offices at 511-513 Ford Building, 15 Ashburton Place, Boston.

RUST PREVENTIVE.—The Detroit Graphite Manufacturing Company, Detroit, Mich., issues a little book calling attention to the rust problem. The cover of the booklet imitates a steel plate evidently not protected by graphite paint. Instances of the damage due to rust are related, and illustrations of structures preserved by good painting with Dixon's graphite paints are given.

## ADVANCE AND WEEKLY CONTRACT NEWS

Relating to Municipal and Public Work—Street Improvements—Paving, Road Making, Cleaning and Sprinkling—Sewerage, Water Supply and Public Lighting—Fire Equipment and Supplies—Buildings, Bridges and Street Railways—Sanitation, Garbage and Waste Disposal—Police, Parks and Miscellaneous—Proposals and Awards

**The Municipal Journal and Engineer** wishes to obtain, at the earliest possible moment, advance and reliable information respecting all work projected. Any items sent us will be greatly appreciated. On request, copies containing such information will be mailed to you.

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by States.*

### STREET IMPROVEMENTS

**Mobile, Ala.**—Bids were received, September 1, for \$195,000, 5 per cent, paving bonds.—Address Mayor.

**Bellevue, O.**—Bonds, \$6,700, will probably be voted for improving Sandusky street, and \$1,600 for improving Monroe street.

**Lorain, O.**—Bonds, \$9,000, will be issued for constructing sidewalks.

**Mt. Vernon, O.**—Bonds, \$65,000, will be issued for improving High street, and \$40,000 for paving improvements.

**Niles, O.**—Bids will be opened, September 12, for \$10,300 bonds for paving North Main street, \$6,750 Park avenue paving bonds, and \$4,500 bonds for grading and constructing cement curbs and gutters in North Main street.—E. L. Hogan, City Auditor.

**Springfield, O.**—Council will probably authorize an issue of \$10,000 street repair bonds as a preliminary to the issue of \$200,000 bonds for the proposed sewerage system.

**Wapakoneta, O.**—Bonds, \$2,750, will be issued for street improvements.

### PROPOSED WORK

**Colorado Springs, Col.**—Council will order the construction of a large number of cement walks.

**Belleville, Ill.**—Council has decided to improve portions of Richland street by pavement and sewers.

**Moline, Ill.**—Tenth avenue will be paved with brick and curbing laid.—Clarke H. Anderson, Secretary, Board of Public Works.

**Muscataine, Ia.**—Plans have been prepared for paving East Second street.—J. J. Ryan, City Engineer.

**Hamtramck, Mich.**—Council has decided to pave Pamqua avenue a distance of four blocks.

**Kirkwood, Mo.**—The Board of Aldermen have passed a resolution to pave certain streets.

**Akron, O.**—Council has decided to pave Long, North, Howard, Prospect and Vine streets.

**Lorain, O.**—The paving of Everett street has been authorized; Washington street may be paved.

**Nevada, O.**—The paving of Main street with brick has been recommended.

**Springfield, O.**—The immediate repair of 45 streets has been recommended by Samuel F. Hunter, Chief of Fire Department.

**Zanesville, O.**—Luck road will be paved with vitrified block and curbing, laid by direction of Council.

**Erie, Pa.**—Mandatory resolutions have passed calling for the improvement of over 100 streets and alleys.

**Green Bay, Wis.**—Council is preparing to improve certain portions of Monroe avenue.

### CONTRACTS TO BE AWARDED

**Elberton, Ga.**—Bids were received, September 4, for paving certain streets with brick.—B. I. Thornton, Mayor.

**La Grange, Ga.**—Bids were opened, August 27, for furnishing and laying about 12,000 feet of granite block or vitrified brick pavement on the public square and adjacent streets.—Solomon Norgress Company, Atlanta, Engineers; C. J. Rooper, Chairman, Street Committee.

**Waycross, Ga.**—Bids will be received, September 22, for paving certain streets, according to plans and specifications.

**Chicago, Ill.**—Bids were opened, September 4, for building sidewalks and driveways at Engine House No. 4, North Halstead street.—William Carroll, City Electrician.

**Gaena, Ill.**—Bids were opened, September 4, for laying new sidewalks about the government building.

**New Orleans, La.**—Bids were received, September 4, for paving portions of Valance street with asphalt.—F. H. White, Acting Comptroller.

**Dover, N. J.**—Bids will be received, September 17, for constructing about 1,900 feet of sidewalk, curb and gutter.—Robert F. Jenkins, Chairman of the Street Improvement; R. W. E. Mindermann, Town Clerk.

**Brooklyn, N. Y.**—Bids will be received, September 12, for regulating and paving with asphalt pavement on a concrete foundation Farragut road, 7,280 square yards; Radde place, 334 square yards.—Bird S. Coler, Borough President.

**Brooklyn, N. Y.**—Bids will be received, September 12, for regulating, grading, curbing and laying sidewalks on the following streets: Dumont avenue, Farragut road, Fourteenth avenue, 40th street, Lincoln avenue, Martense street, Repose place, Rogers avenue.—Bird S. Coler, Borough President.

**New York, N. Y.**—Bids will be received, September 10, for repairing 15,000 square yards asphalt block pavement in the borough of Manhattan.—John F. Ahearn, Borough President.

**College Hill, O.**—Bids will be received, September 10, for constructing cement walks in certain streets, according to plans and specifications.—F. R. Strong, city clerk.

**Columbus, O.**—Bids were opened, September 4, for repaving the roadway with stone blocks, setting five-inch curb and constructing sub-drains and catch basins in Broad street, also for paving a large number of streets and alleys with hard-burned brick or block or other substantial material.—Edward F. McGuire, Secretary, Board of Public Service.

**Elyria, O.**—Bids were opened, September 4, for paving the west approach to the Erie avenue bridge.—O. E. Haserot, Auditor of Lorain County.

**Mansfield, O.**—Bids were opened, August 29, for grading and paving with brick alley known as North Carpenter alley.—Board of Public Service.

**Memphis, Tenn.**—Bids will be received, September 6, for laying about 3,500 yards of paving. H. J. P. Walsh, Acting Mayor.

### CONTRACTS AWARDED

**Newport, Ky.**—R. L. Schofield has contracts to pave Baem avenue and Eleventh street with brick, at \$1,400 and \$7,300 respectively.

**Manistee, Mich.**—The Central Bitulithic Company, of Detroit, has been awarded a contract for 3,250 square yards of paving.

**Ashtabula, O.**—Putnam and Starkweather are low bidders for paving Prospect street, at \$17,686; they will also pave South Main street.

**Bucyrus, O.**—W. H. Raymond & Co. has been awarded contract to pave Prospect street, for \$6,750; Athens block with tar filler is to be used.

**Mt. Vernon, O.**—Evans & Harper are low bidders for paving West High street, at \$52,000; Fowler & Wilson are low bidders on Sandusky street, at \$33,000; gravel foundation and Townsend brick are to be used.

**New Philadelphia, O.**—George W. Schwab, Fred Schmidt and J. D. McCollow have contract for rubble wall, sidewalk and curb, amounting to \$1,270; the contract for paving was awarded to Downs & Campbell, of Canton, at 91 cents a square yard. Minerva paving blocks to be used and work cemented.

**Niles, O.**—Armstrong, McGlashin & Dennis, of Warren, have the contract for paving

North Main street at \$9,977; B. Mango & Company, of Youngstown, will do the curbing and guttering for \$2,234, and will also pave and curb Park avenue, at \$6,480.

**Youngstown, O.**—B. Mango & Co. have been awarded contract for paving, curbing and guttering Main street, at \$4,234, and West Park street, at \$6,484, and Armstrong, McGlashin & Dennis, of Warren, for paving Main street, at \$10,000.

**Harrisburg, Pa.**—Contracts for constructing sewers have been awarded by the Highway Department as follows: Paxton street, from Paxton creek to Cameron street, Thomas Opperman, for \$1,112; Sixth-and-a-half street, from Division to 150 feet south of Wiconisco, to Berghaus & Momt, for \$539; Summit street, from Shrub to Walnut, W. H. Opperman, for \$226; Schaefer street, from 50 feet south of Paxton to 13 feet south of Berryhill, to J. S. Brady, for \$261; Fourteenth street, from Derry to Swatara, to George B. Stucker, for \$1,487.

**Walla Walla, Wash.**—The Warren Construction Company, Portland, Ore., has been awarded additional contracts for 48,592 square yards of paving.

**Toronto, Ont., Can.**—The Warren Bituminous Company has contract for 3,045 square yards of bitulithic.

### ROADS

**Granby, Conn.**—Bids will be received, September 5, for constructing a macadam and telford section of road, according to plans and specifications.—Jesse W. Ruick, Charles A. Green, Fred E. Rice, Selectmen.

**Woodbury, Conn.**—Bonds were opened, September 1, for grading and constructing 3,240 linear feet of a section of road, according to plans and specifications.—Charles S. Curtiss, Alfred L. Johnson, Frank B. Peck, Selectmen.

**Bloomfield, Ind.**—Bids were received, August 30, for \$6,095, 4 1-2 per cent, 20-year Washington township county road bonds.—Address Auditor, Greene County.

**Martinsville, Ind.**—Bids will be received, September 5, for \$3,800, 4 1-2 per cent, Morgan County gravel bonds.—Address County Auditor.

**Wilmington, N. C.**—Bids were opened, September 3, for constructing twelve miles of macadam road in Masonboro and Federal Point townships.—Duncan McEachern, Chairman, New Hanover County Commissioners.

**Wheeling, W. Va.**—George W. Lemmon has the contract for paving the National road, requiring over 16,000 square feet of brick; the Fort Henry Construction Company has the contract for straight curb and sewer pipe.

### SEWERAGE

**Henderson, Ky.**—An election will be held in November to decide the question of issuing \$200,000 sewer bonds.

**Hamilton, O.**—Bonds, \$20,000, will be sold for constructing a storm water system.

**Norwood, O.**—Bids will be received, September 7, for \$20,000 4 1-2 per cent, 25-year sewer bonds.—W. E. Michgar, City Auditor.

**Painesville, O.**—Bonds, \$6,000, will be issued for constructing the High street sewer.

**Elm Grove, W. Va.**—Bids will be received, September 18, for \$18,000 coupon bonds, to improve the sewerage system.—J. B. ... Chairman, Bond Commissioners.

### PROPOSED WORK

**Indianapolis, Ind.**—Plans are being prepared for constructing sewers in Brightwood.—Address City Engineer.

**Akron, O.**—The Sewer Committee has recommended the enlargement of three culverts to take care of the sewage in Wolf creek; estimated cost, \$11,000; a new 30-inch sanitary sewer is to be constructed shortly in Aqueeduct and Hickory streets; Council has authorized the construction of sewers in Maple, Valley, Silver, and Gold streets.

**Fremont, O.**—Council will have a sewer constructed in South High street, from the Lake Shore tracks to Tiffin street.

**Lockwood, O.**—Toledo engineers have prepared plans and will shortly commence the erection of a sewage reduction plant; there will be five large filtering beds and two tanks having a total capacity of 520,000 gallons.



**Niles, O.**—The construction of sewers in Vienna avenue and Pearl, Seneca and Beaver streets has been authorized.—Engineer Wilson.

**Zanesville, O.**—Council has decided to construct a storm and sanitary sewer in Greenwood avenue.

**Norman, Okla.**—Plans and specifications are being prepared for a \$25,000 sewer system, with an outlet in the Canadian river, three miles south of the city; a special election will be called to vote bonds.

**Altoona, Pa.**—Sewers are to be constructed in the South District.—Board of Public Works.

**St. Boniface, Man., Can.**—Several plans are being considered for the construction of a trunk sewer in the East-end Annex; for constructing main sewers and equipping a new sewage disposal plant on the septic tank system.—Address Chairman Wallace.

#### CONTRACTS TO BE AWARDED

**Danville, Ill.**—Bids were received, September 8, for furnishing 10,000 feet of 24 to 14-inch tile drain and laying the same.—A. Watkins, Clerk, Drainage Committee, District No. 4, Oakland, Vermillion County.

**Nappanee, Ind.**—Bids will be received, September 14, for constructing sewers in several streets.—John W. Brown, Town Clerk.

**St. Charles, Mo.**—Bids will be received, September 7, for constructing emergency pump plants for a system of sewers, according to plans and specifications.—Burnes & McDonnell, Kansas City, Engineers; C. C. Kairsteder, City Clerk.

**Omaha, Neb.**—Bids were received, September 4, for constructing 37,000 feet of brick or concrete sewers, 7-12 feet in diameter, and 800 feet of concrete or brick sewers, 7 feet in diameter.—Dan. B. Butler, City Clerk.

**Brooklyn, N. Y.**—Bids will be received, September 12, for constructing sewers in Warehouse avenue; East Third street; New York avenue; Huntington street; Congress street; Hemlock street; East Ninetieth street.—Bird S. Coler, Borough President.

**New York, N. Y.**—Bids will be received, September 10, for building sewers in West 171st street; West 211th street; Seventh avenue, between 144th and 148th streets; 203d street; 204th street; Seventh avenue, between 145th and 146th streets; 152d street.—John F. Ahern, Borough President.

**Marietta, O.**—Bids will be received, September 10, for constructing sewers in certain streets, according to plans and specifications.—A. N. Fountain, Clerk.

**St. Mary's, O.**—Bids will be received, September 5, for installing a complete sanitary sewerage system and sewage disposal works, to cost \$75,000.—Board of Public Service.

**Steubenville, O.**—Bids will be received, September 10, for laying sewers in certain streets.—T. W. Vance, Clerk.

**Lake City, S. C.**—Bids will be received, September 20, for a system of storm sewers, including 2,800 feet of 30 to 64-inch, 4,300 feet pipe 16 to 27-inch, and 54 catch-basins.—M. D. Nesmith, Chairman, Public Works Commission.

#### CONTRACTS AWARDED

**St. Boniface, Man., Can.**—Contracts have been awarded as follows: P. E. Colternér, sewer on Richot street, \$1,212, and wood sidewalks on Larivière and McTavish streets; Waller & McKenzie, granolithic sidewalk on Eugénie street, \$879, sewer in Third street, \$1,735, grading Bertrand street, \$1,025; A. Shannon, sewer in St. Jean Baptiste street, \$1,395; Dobson & Jackson, sewer in Horace street, \$1,354; Octave Gustave Guay, wood sidewalk on Second street, and David Newlands, to build several sewers.

#### WATER SUPPLY

**Woodland, Cal.**—The people will vote on issue of bonds for waterworks and sewer extensions.

**Colgate, I. T.**—Bonds, \$43,000, have been voted for establishing a water plant.

**Franklin, Mass.**—A special election will be held to vote on question of purchasing the franchise of the Water Company; an artesian well will be sunk.

**Albany, Mo.**—Bids will be received, September 11, for \$15,000 waterworks bonds.—John Spessard, City Clerk.

**Elm Creek, Neb.**—Bonds, \$10,000, have been voted for a municipal water plant; an elevated tank system is also proposed.

**Arcade, N. Y.**—The taxpayers have voted \$21,000 bonds for the purchase of Cherry Springs, at Sandusky.

**Lumberton, N. C.**—The proposition to issue \$15,000 water bonds will be submitted to a vote of the people.

**Bowbells, N. D.**—Bids will be received, September 10, for \$12,000 6 per cent. 5-20-year waterworks bonds.—D. E. McLellan, City Auditor.

**Cincinnati, O.**—Bids will be received, September 18, for the purchase of \$1,000,000 4 per cent. additional waterworks bonds.—Elmer G. Prior, Clerk, Commissioners of Waterworks.

**Mt. Vernon, O.**—Bonds, \$30,000, will be issued for waterworks extension and equipment bonds, the former sale being irregular.

**Wauseon, O.**—Bids will be opened, September 24, for \$20,000 bonds for constructing an addition to the waterworks pumping station.—Charles J. Hodges, Clerk.

**Westchester, Pa.**—Bonds may be issued for improving the water system.

**Charlottesville, Va.**—Bonds, \$135,000, have been voted for improving the water system.

**Wheeling, W. Va.**—Council is considering an issue of \$450,000 bonds for waterworks repairs.

**Elkins, W. Va.**—An election will be held to decide the question of issuing \$20,000 bonds for improving the waterworks and sewage systems.

**Battleford, Sask., Can.**—Bonds, \$30,000, have been voted to establish a water system, including pumping station, pump, engine, and electric-light plant.

#### PROPOSED WORK

**Russellville City, Ark.**—The Russellville City Council has passed an ordinance laying off a large portion of the city for the construction of a waterworks system.

**Peoria, Ill.**—The Peoria Glucose Company is preparing to double the capacity of its waterworks plant.

**Napello, Ia.**—The Napello Water and Light Company will improve its plant in the near future.

**West Branch, Mich.**—Plans are being prepared for a waterworks plant, estimated cost \$35,000.—John H. N. Bloomfield, Engineer.

**Wilmington, N. C.**—The city is considering purchasing the local water plant or installing a new one.

**Newark, O.**—Riggs & Sherman, of Toledo, have been retained as consulting engineers for the new waterworks plant.

**Norwood, O.**—Plans are being prepared for a 65x31-foot addition to the water plant; additional pumping machinery will be installed.—O. N. Foster, Engineer.

**Reading, Pa.**—The Elk Lake Water Company has been incorporated, with a capital of \$40,000, to supply water to the people of Parsons and Hamblton, Tucker County.—H. E. Armes, A. K. Kinsey, W. H. Miller, Jr., incorporators.

**McEwen, Tenn.**—Council proposes to improve the water system by building a new reservoir.

**Nashville, Tenn.**—Council is considering the establishment of a new reservoir at a lower level.

**San Antonio, Tex.**—D. E. Hirshfield has purchased a site for the erection of a \$200,000 sanitarium; an artesian well will be sunk to provide water.

#### CONTRACTS TO BE AWARDED

**Tinley Park, Ill.**—Bids were received, September 4, for laying 1,200 feet of six-inch cast-iron water mains.—C. Andres, Jr., Village Clerk.

**Spencer, Ia.**—Bids will be received, September 5, for constructing a 70-gallon steel tank, according to plans and specifications.—E. L. Taylor, City Clerk.

**Trenton, N. J.**—Bids were received, August 30, for constructing a 48-inch main of steel pipe; estimated cost, \$120,000.

**Kelleher, Minn.**—Bids will be opened, September 17, for constructing a waterworks system, including a steel water tower and wooden tank, and fireproof pumping station.—M. B. Stoner, Bemidji, Engineer.

**Montana Lake, Minn.**—Bids were opened, September 4, for extending water mains on certain streets.—J. H. Dickman, Recorder.

**St. Louis, Mo.**—Bids were received, September 4, for furnishing and laying thirteen miles of water pipe.—Board of Public Improvements.

**California, O.**—Bids will be opened, September 28, for furnishing machinery and apparatus for the filtration plant and settling reservoirs, according to plans of the Chief Engineer.—Elmer G. Prior, Clerk, Commissioners of Water Works.

**Lakewood, O.**—Bids will be received, September 8, for laying a continuous water main in Kile avenue, according to plans.—E. R. Lieblein, Clerk, Board of Trustees of Public Affairs.

**Pierre, S. D.**—Bids will be received, September 7, for sinking an artesian well, approximately 1,300 feet deep.—C. F. Larrabee, Washington, Acting Commissioner.

**Manassas, Va.**—Bids will be opened, September 19, for constructing a waterworks system and electric-light plant.—O. N. Newman, Chairman.

**Winnipeg, Man., Can.**—Bids will be received, September 10, for the supply of 2,000 one-half-inch water meters.—C. J. Brown, City Clerk.

#### CONTRACTS AWARDED

**Dayton, O.**—Charles L. Allen, of Marion, is low bidder for installing the high-pressure water system for the southeastern section, at \$90,000.

#### PUBLIC LIGHTING

**Talbottown, Ga.**—Bids will be received, September 11, for \$11,000 6 per cent. 20-year electric-light bonds.—E. H. McGehee, Mayor.

**Essex, Ia.**—Oscar Nelson is interested in a project to furnish electricity for lighting the city.

**Newport, Ky.**—The City Auditor has been authorized to borrow \$10,000 for the light fund.

**Lumberton, N. C.**—The issue of \$15,000 light and water bonds is being considered.

**Lakewood, O.**—The citizens will vote, October 10, on issue of \$25,000 bonds, to enlarge the municipal gas plant.

**Woodward, Okla.**—The citizens will vote on issue of \$15,000 electric-light bonds.

**Kingwood, W. Va.**—An issue of \$7,000 electric-light bonds has been authorized.

#### PROPOSED WORK

**Clarinda, Ida.**—The appropriation of \$7,000 for the purchase of dynamo for the Clarinda State Hospital has been petitioned for.—Max E. Witte, Superintendent.

**Wapello, Ia.**—The Wapello Electric Light and Power Company contemplates erecting a waterworks system, to cost \$15,000.—K. Vaught, President.

**Ashland, Minn.**—The White River Power Company, incorporated, will erect a dam on White river, five miles from Ashland, and within a year will have a plant capable of producing 5,000 h.p.; a power house will be erected which will be equipped with three sets of twin wheels and three 500-k.w. generators; the power will probably be generated to Ashland.

**Eveleth, Minn.**—Council has been petitioned for a municipal electric-light plant.

**Mendenhall, Miss.**—A franchise to construct an electric-light and power plant has been granted A. W. Dent, L. E. Magee, and associates.

**Versailles, Mo.**—The J. R. Settle Construction Company, of St. Louis, has franchise for furnishing electric-light and power; a concrete powerhouse will be erected.—J. B. Quigley, Engineer and Architect; J. R. Settle, President; W. B. Quigley, Secretary.

**Cincinnati, O.**—The Little Miami Light, Heat and Power Company, recently organized, will erect one of its new powerhouses on the Little Miami river at Milford. Plans for a \$20,000 concrete, brick and iron building are being prepared.—John W. Hill & Sons, Engineers.

**Logan, O.**—Plans have been prepared for a municipal electric-light plant, estimated cost, \$16,763.—Village Engineer Champ.

**Union City, Tenn.**—About \$3,000 will be expended for improvements to the electric-light plant and waterworks, installing engine, electrical supplies, etc.—John T. Wilkes, Mayor; Alton Wade, Engineer in Charge; G. R. Wadleigh, Bemis, Consulting Engineer.

#### CONTRACTS TO BE AWARDED

**Mobile, Ala.**—Bids will be received, October 1, for erecting and equipping a municipal electric-light plant.—Pat J. Lyons, Mayor.

**Lafayette, Ga.**—Bids were opened, September 3, for furnishing all line material and accessories and labor for installing a complete alternating current arc system of lights; also furnishing and laying 12,000 lineal feet of 4-inch water mains, with forty fire plugs.—O. B. Hopkins, Chairman, Water and Light Committee.

**Staples, Minn.**—Bids were opened, August 31, for the construction of a complete waterworks and electric-light plant, according to plans and specifications.—Clausen, Burch & Pillsbury, St. Paul, Engineers; J. D. Marlin, Village Recorder.

**Budford, N. D.**—Bids will be received, September 10, at the office of the U. S. Reclamation Service, Williston, for installing three transformers, with necessary electrical apparatus and water pipes in pumping station.—H. A. Sherram, Electrical Manager.

For Machines to Drill, Blast and Test Holes and Water Wells, write "LOOMIS CO., TIFFIN, O."

**Cleveland, O.**—Bids were opened, September 4, for an electric-lighting plant for the City Farm School, near Hudson.—W. J. Springborn, President, Board of Public Service.

**Columbus, O.**—Bids will be opened, September 14, for building a dam across the Walhonding river, six miles west of Roscoe.—Charles E. Perkins, Chief Engineer, State Board of Public Works.

**St. Bernard, O.**—Bids will be opened, September 5, for the renewal and reconstruction of the steam pipe system of the powerhouse of the electric-light and waterworks.—W. J. Bolles, Village Clerk.

#### CONTRACTS AWARDED

**Ashtabula, O.**—The General Engineering Company of Cleveland has the contract for transformers for the lighting plant.

#### FIRE EQUIPMENT AND SUPPLIES

**Los Angeles, Cal.**—An additional chemical engine is to be purchased for use in the eastern section.—Address Fire Commissioners.

**Coeur D'Alene, Ida.**—An election will be held to vote on issue of \$8,000 bonds for building an engine-house and purchasing fire apparatus.

**Champaign, Ill.**—Council is considering the purchase of a fire steamer.

**Richmond, Ind.**—An additional engine-house is to be built.—Board of Public Works.

**Zachary, La.**—A voluntary fire company has been organized, with thirty members.

**Lowell, Mass.**—Council is preparing to establish the fire protection in the outlying district. Additional hose will be purchased.

**Rahway, N. J.**—A gasoline engine may be purchased to take the place of Engine No. 2.

**Rochester, N. Y.**—The Fire Commissioner is arranging to establish two additional fire companies.

**Hummelstown, Pa.**—A new fire company has been organized; apparatus will be purchased.

**Johnstown, Pa.**—Bids will be opened, September 28, for \$50,000 Fire Department bonds.—Chas. H. Wetin, City Treasurer.

#### CONTRACTS TO BE AWARDED

**Chicago, Ill.**—Bids will be received, September 6, for furnishing one straight-frame service hook-and-ladder truck.—James Horan, Fire Marshal.

**Kendallville, Ind.**—Bids were opened, August 31, for erecting a fire engine house, police station and city prison, according to plans and specifications.—L. S. Barr, City Clerk.

**Fort Leavenworth, Kan.**—Bids will be received, September 19, for installing a complete electric fire-alarm telegraphic system at Fort Leavenworth.—Capt. W. E. Normoyle, Quartermaster.

**New Orleans, La.**—Bids were received, August 27, for building engine house No. 25, according to plans and specifications.—F. W. White, Acting Comptroller.

**Norway, Mich.**—Bids will be received, September 7, for a system of electric fire-alarms, an electric clock and a class signal system for the new high school building.—Charles E. Cullen, Board of Education.

#### MUNICIPAL BUILDINGS

**San Diego, Cal.**—Bids were received, September 3, for the purchase of \$120,000 4 per cent. school bonds.—John F. Schwartz, County Treasurer.

**Colorado Springs, Col.**—Bonds, \$25,000, have been voted for erecting a schoolhouse.

**West Palm Beach, Fla.**—An election will be held to pass on issue of additional school bonds.

**Biggsville, Ill.**—An election will be held in September to decide question of issuing \$8,000 school bonds.

**Indianapolis, Ind.**—Council has formally approved an issue of \$3,000,000 bonds for the erection of a City Hall.

**Ann Arbor, Mich.**—Bonds, \$30,000, may be issued for erecting a new City Hall.

**St. James, Minn.**—Plans are under consideration for a combined City Hall and fire station.

**Winona, Minn.**—Bonds, \$10,000, have been voted for schools.

**St. Joseph, Mo.**—An election will be held to vote on issue of bonds for a jail.

**Cleveland, O.**—An election will be held to vote on \$300,000 additional City Hall bonds.—Tom L. Johnson, Mayor; Peter Witt, Clerk.

**Lorain, O.**—Bonds, \$50,000, will be issued for City Hall purposes.

**Hillsboro, Tex.**—An election will be held to decide question of issuing bonds for erecting a schoolhouse.

**Malone, Tex.**—The Attorney-General has approved an issue of \$7,000 school bonds.

#### BRIDGES

**Charleston, Ill.**—The closing of the 280-foot bridge across the Embrass river, at Blakeman Crossing, has been recommended to the Highway Commissioners.—W. E. Millar, Engineer.

**Princeton, Ind.**—A number of bridges will be built this fall; four or five structures will be built in some of the townships.—Gibson County Commissioners.

**South McAlester, I. T.**—The city and adjacent Choctaw Nation will form an association to build bridges, trusting to the county, when formed, to reimburse them by buying the bridges; a \$3,500 bridge will be built across Coal creek on this plan.

**Wichita, Kan.**—Council has authorized construction of six steel bridges across the proposed Wichita drainage canal, and bids are invited; estimated cost, \$16,682.93; the structures range from 46 to 80 feet in length, the Broadway bridge, which is the largest, will be 80 feet long and 18 feet wide, and cost \$2,263.

**Munfordsville, Ky.**—The Munfordsville Bridge Company has been organized, capital, \$30,000, to build a bridge over Green river.—W. B. Craddock, President; H. W. Curley, Vice-President; George D. Mentz, Treasurer; D. A. McCandless, Secretary.

**Albany, N. Y.**—The State Board of Examiners and Appraisers, State Engineer Van Alstyne and representatives of the Delaware and Hudson Railroad Company have held conferences on the construction of a \$40,000 bridge over the canal at Waterford.

**Chatanooga, Tenn.**—Several fine new bridges of both steel and concrete will be built on the government roads in Chickamauga Park.—E. E. Betts, Engineer.

**Wausaukee, Wis.**—It has been decided to build a bridge across the Menominee river, a quarter of a mile north of the line between sections 28 and 33, directly east of Wausaukee.—H. C. Shields, Wausaukee, W. J. Oberdorffer, Stephenson, Committee.

#### PROPOSED WORK

**Helena, Mont.**—A petition has been filed for constructing a \$15,000 bridge, 1,800 feet in length, across Prickly Pear creek, near the old flour mill.—Lewis and Clark County Commissioners.

**Beatrice, Neb.**—The County Board is considering the construction of a bridge two miles up the river.

**Oswego, N. Y.**—Plans have been prepared for new bridges, with clearance way of fifteen feet, five inches, at Utica and Bridge streets. The State will build 133 feet of the Utica street bridge and 155 feet of the one at Bridge street.—Henry A. Van Alstyne, Albany, State Engineer and Surveyor.

**Cleveland, O.**—Bonds, \$700,000, have been issued for repairing the central viaduct.

**Toledo, O.**—Bids will be opened, September 17, for \$67,000 bonds for bridge improvements.—D. T. Davis, Jr., County Auditor.

**Reading, Pa.**—The Berks County Board has petitioned for two bridges in Hamburg borough, one across Laurel Creek, near Temple, and the other across the Perkiomen, at Washington street.

**Sioux Falls, S. D.**—The County Commissioners have decided to replace the wooden bridge which crosses the Sioux River at Sixth street, with a modern steel structure of two spans, 204 feet in length and twenty-four foot roadway and foot paths.

**Spokane, Wash.**—Two bridges are to be constructed at Howard street; No. 2 bridge in reinforced concrete, it is estimated will cost \$19,800, and in steel \$17,500; No. 4, or North Howard street bridge, in concrete, will cost \$41,400, and in steel, \$34,500; the Water Power Company will pay half the cost, or \$30,600, if concrete bridges are constructed, and \$26,000 for steel.

**Charleston, W. Va.**—Council is considering a proposition of the Kanawha Valley Traction Company to build a bridge across the Elk river.

#### CONTRACTS TO BE AWARDED

**Bloomfield, Ind.**—Bids will be received for constructing one bridge and repairing two others.—Green County Commissioners.

**Brownstown, Ind.**—Bids will be received for constructing thirteen bridges.—Jackson County Commissioners.

**Portland, Ind.**—Bids were received, September 4, for the repair of one 50-foot steel bridge, building of stone or concrete abutments between sections 20 and 23, Beacreek township, and sections 9 and 10, Jackson township, and the repair of a steel bridge in Beacreek and on the Wabash township.—L. H. Trubearne, James Rupel, Alban Strouble, Jay County Commissioners.

**Escanaba, Mich.**—Bids were received, September 4, for three bridges; abutments to be of stone and the superstructure to have steel beams.—D. A. Brotherton, City Engineer; T. J. Burke, City Clerk.

**Fargo, N. D.**—Bids will be received, September 6, for constructing a 30-foot bridge in Amana township, 60-foot bridge, Pleasant township, 60-foot bridge, Ransom township, 30-foot bridge, Raymond township, 80-foot bridge, Walberg township, 30-foot bridge, Stanley township, 20-foot bridge, Stans township, 20-foot bridge, Stanley township, 16-foot bridge, Casey township.—Arthur G. Lewis, County Auditor.

**Carbondale, Pa.**—Bids will be received, September 12, for the erection of a concrete bridge over the Lackawanna river, at Seventh avenue.—H. T. Williams, City Clerk.

**Memphis, Tenn.**—Bids will be received by the Shelby County Levee Commissioner for raising the steel span (165 feet) of the Looine Hatchie River, on the Randolph road, near Woodstock, ten feet; raising the steel span of the Naccannah Bridge on the Hoen Lake road at New South Memphis, fifteen feet, and building two concrete shore bridges and two eighteen-foot approaches.—Charles A. Garton, Engineer.

**Milwaukee, Wis.**—Bids will be received September 14, for constructing a bascule bridge over the North Menomonee Canal, at Sixth street, according to plans and specifications, said bridge to form one section of the proposed First avenue and Sixth street viaduct.—Charles J. Poetsch, Commissioner of Public Works; Peter J. Koehler, Deputy Comptroller.

#### STREET RAILWAYS

**Denver, Col.**—Surveys are being made for extending the Denver & Intermountain Railway from Denver to Lookout Mountain.—Attorney Caldwell Yeaman, General Manager.

**Webster City, Ia.**—Council has granted the Boone-Webster City Company a franchise carrying the right to operate in this city, and exemption from taxation for five years; a depot site and a right of way will be donated.

**Winfield, Kan.**—The Union Street Railway has been sold to H. D. Siggins, of Warren, Pa., who with associates owns interurban line being built from Independence to Cherryvale; a line will eventually be built to connect Kansas City and Chicago.

**Ludington, Mich.**—The Ludington, Hartland and Southwestern Railroad is to build a \$1,000,000 railroad in the State.—Address Milwaukee Engineering Company.

**Milton, Ore.**—A franchise has been granted the Walla Walla Valley Traction Company for an electric railway in Main and other streets; construction shall be completed in six months.

**Huron, S. D.**—The Sioux City, Pierre and Northwestern Railway has been incorporated, capital, \$1,000,000, and will build a line between Sioux City and Pierre.—A. S. King, G. M. Gordon, and others, incorporators.

**Spokane, Wash.**—The Columbia and Walla Walla Railway Company will be extended to Milton and Freewater, Ore., 80 miles; surveying will begin at once.—J. W. Morrow, General Manager.

**Spokane, Wash.**—An electric railway is to be built between Spokane and Cheney, 18 miles; franchises have been granted by the towns of Hayford and Cheney.—Address Charles P. Lutz.

**Wheeling, W. Va.**—The Rapid Transit Railway Company has been chartered to build a line from Wheeling to Seabright Hollow; capital stock, \$1,000,000.

**Racine, Wis.**—A franchise to build lines in the city streets has been petitioned for by the Chicago and Milwaukee Electric Railway Company.

#### PROPOSED WORK

**Lafayette, Ind.**—The Lafayette and Hoopeson Interurban Railway, capital \$10,000, will construct a line from West Lafayette to Hoopeson, Ill.—Isaac E. Switzer, William Walsh, Elmer Hawkins, and others, incorporators.

**Keokuk, Ia.**—Behr & Co., St. Louis, Mo., seek a franchise to build an electric interurban line from Keokuk to Burlington.

**Greensboro, N. C.**—The Greensboro Electric Company will build a three-mile extension in a new part of the city.

**Dayton, O.**—A franchise to extend double tracks with switches in certain streets, has been asked for by the Peoples' Railway Company.

**Findlay, O.**—The Findlay-Marion Railway Company has received a franchise to extend its lines in Mount Blanchard.

**Chattanooga, Tenn.**—The Chattanooga Railway Company will expend \$20,000 for improvements.

**Jackson, Tenn.**—The Jackson Railway and Light Company will extend its lines to Berins, two miles distant.

**Spokane, Wash.**—The Colville and Columbia River Railway and River Transportation Company has been incorporated, Capital, \$250,000, and will build nineteen miles of line between Colville and Myers Falls, making steamship connections on the



Columbia River.—A. Wilkes, W. B. Aris, Ellen C. Gilluly, H. C. Rice, Incorporators.

Kaukauna, Wis.—The Wisconsin Traction, Light, Heat and Power Company will improve the interurban line between Kaukauna and Neenah.

Racine, Wis.—The Milwaukee Electric Railway and Light Company is preparing to extend its line to Burlington.

#### CONTRACTS AWARDED

Des Moines, Ia.—D. J. White & Company, New York, have the contract for the new electric interurban line, 100 miles long, being built from Des Moines to Fort Dodge by the Newton Northwestern Railway Company, which is controlled by Boston interests.

Clearfield, Pa.—J. K. Palmer & Company have the contract to construct fifteen miles of railway for the Little River Lumber Company.

#### MISCELLANEOUS

Ellwood City, Kan.—Bids were received, September 1, for \$15,000, 4 1-2 per cent., 10-20-year improvement bonds.—J. H. H. Burgess, City Clerk.

Syracuse, N. Y.—Bids were received, August 21, for \$225,000 local improvement bonds.—J. R. Shanahan, Comptroller.

Akron, O.—The city's share of constructing a conduit 6 1-2 feet in diameter in Wolf Ledge Run is estimated at \$11,408.—City Engineer Payne.

Dennison, O.—Bids were received, August 27, for \$20,000 improvement bonds.—Charles D. Jeffries, Clerk.

Toledo, O.—Council is arranging for sale of \$80,000 public improvement bonds.

Wellston, O.—Bids were opened, August 28, for \$9,000 bonds for improving public school property.—Richard C. Thomas, Clerk, Board of Education.

Holidaysburg, Pa.—Bids were opened, August 14, for \$75,000, 3.56 per cent., 30-year, improvement bonds.—U. L. Westler, Clerk.

Marshall, Tex.—The citizens have voted issue of \$185,000 bonds for municipal improvements.

Chatham, Va.—Bids were received, August 21, for \$17,000, 5-20-year, municipal bonds.—J. H. Hargreaves, Jr., Mayor.

Suffolk, Va.—Bids were received, September 3, for \$100,000, 4 per cent. town improvement bonds.—U. B. Ferguson, Clerk, Finance Committee.

Spokane, Wash.—Farmers at Rock Island, west of Spokane, are organizing a mutual company to run a telephone line to Wenatchee and Badger Mountain, connecting also with Waterville, giving connection with every town in the Wenatchee valley; the line will be extended into the Big Bend country before the end of the year.

Winnipeg, Man., Can.—The Dominion Government has appropriated \$10,000 for various improvements along the Red river, near Winnipeg.

#### CONTRACTS TO BE AWARDED

New York, N. Y.—Bids will be received, September 6, for furnishing 3,000 cubic yards of crushed trap rock and 3,000 cubic yards of screenings of trap rock, for parks in Bronx Borough.—Moses Herrman, President, Park Board.

Cincinnati, O.—Bids will be received, September 15, for furnishing and installation of switch and boards, apparatus, storage batteries, racks, cables, etc., for the complete operation of the fire-alarm telegraph system and the Fire Department telephone exchange to be located in City Hall; also for eighty fire-alarm boxes to be used in connection with same, all in accordance with plans and specifications.—Abe Furst, President, Board of Public Safety; J. J. Millville, Secretary.

Cleveland, O.—Bids will be received, September 22, for constructing a concrete masonry arch, according to plans and specifications.—Julius C. Dorn, Clerk, Cuyahoga County Commissioners.

Steubenville, O.—Council is considering the improvement of Clifton avenue by building a retaining wall.

Youngstown, O.—Bids are invited for bonds for the following purposes: Sewering of Superior street, \$900; paving of Bresett street, \$3,490; paving of Dealson street, \$9,375; repaving of the Wick avenue hill, \$3,650; Foster avenue, sewer, curb, and gutter, \$1,120; grading of Foster street, \$730; paving of Grant street, \$9,820; paving of Oak Hill avenue, \$45,450.—Address Sinking Fund Commissioners.

Wyoming, O.—Bids were received, September 3, for \$38,000, 4 per cent. Village Improvement bonds.—A. H. Walton, City Clerk.

Seattle, Wash.—The matter of subways and elevated tracks is under consideration by the city authorities.

Elkins, W. Va.—An election will be held in September to decide question of issuing \$60,000 improvement bonds.

#### IN THE MARKET

##### AT HOME

The Art Metal Construction Company, Jamestown, N. Y., wants a second-hand 8 or 10-foot Ohl toggle press.

American Confectionery Co., Nashville, Tenn., wants a 10-ton ice machine.

Banks & Taylor, Coal Creek, Tenn., want a boiler engine and dynamo, for an electric light plant.

S. E. Crowley, 1225 Boardwalk, Atlantic City, N. J., wants a dryer of five tons capacity per hour.

W. S. Diver, Anderson, S. C., wants roofer's tools and roofing supplies.

George J. Glover, Hibernia Bank & Trust Building, New Orleans, La., wants electrical fixtures for an office building.

George S. Pritchard, Greenville, N. C., wants doors, windows, blinds, bath tubs, etc., for a hotel.

Plainview Cement Stone Co., Plainview, Texas, wants mixer's tamper and conveyers.

Rhode Island Co., Spray, N. C., wants Portland cement in car load lots.

E. R. Rector, Haymarket, Va., wants a small gasoline engine.

W. M. Riggs, Clemson College, S. C., wants equipment for an electric plant.

Thomas J. Rowe, Board of Trade Building, Norfolk, Va., wants cement block machines.

Simons-Mayrant Co., Charleston, S. C., want cream colored press brick, structural steel, structural and ornamental iron work, and other supplies for a \$150,000 building.

Shropshire & Co., Yoakum, Texas, want metal ceiling roofing, column windows, doors, metal stairs, etc.

Emmett Vaughn, Des Arc, Ark., wants a 10-ton ice plant.

T. L. Townsends, McDonalds, N. C., wants a stiff mud-brick machine for daily output of 25,000.

##### ABROAD

Buenos Ayres, Argentina.—The government has decided to call for tenders for eight bridges on the road from Dolores to General Laval, at a cost of \$100,000. Address, 204, Bureau of Manufactures, Washington, D. C.

Tokio, Japan.—The Japanese Department of Communications intends to establish telephone exchange offices at 130 more cities and towns. The cost is estimated to amount to \$10,000,000, and the work will extend over a period of seven years. Address, 205, Bureau of Manufactures, Washington, D. C.

Melbourne, Australia.—Tenders will be received at the office of the Deputy Post Master General until September 18, for about nine miles of lead covered paper insulated telephone cable. Address, 206, Bureau of Manufactures, Washington, D. C.

#### WANTS

DRAUGHTSMAN wanted by metallurgical plant between New York and Philadelphia: steel, copper or lead plant experience desirable, but not essential; applicants must state age, nature of experience, references and salary to start. Address, D. T. W., Municipal Journal.

DRAUGHTSMEN—Two good power station piping draughtsmen. D. W., 121, Municipal Journal.

DRAUGHTSMAN, architectural; experienced; state salary. D. B., 236, Municipal Journal.

DRAUGHTSMAN, with long years' experience in the architectural line, on church, hotel, tenement, etc.; good perspective maker. 149, Municipal Journal.

ENGINEER wants position; steady and sober; young man; reliable. M. J., Municipal Journal.

ENGINEER, 38, first-class apartment house mechanic, experience and references. 402, Municipal Journal.

ENGINEER; small plant; firing, repairing, tools. W. H., Municipal Journal.

#### BOOK REVIEWS

**The Earning Power of Railroads, New York.**—By Floyd Mundy; Metropolitan Advertising Company, 1906. Cloth, 5 by 7 1/2 inches, 290 pages. This book presents in unusual form statistics of 125 railroads of the United States and Canada. The first forty pages are given to a general discussion of income accounts, operating expenses and maintenance of way and equipment. Seventy pages are occupied with statistical tables, showing range of earnings. The rest of the book is taken up with general information about earning capacity. Supplied by the Municipal Journal and Engineer at \$2 postpaid.

**From Poverty to Power, or The Realization of Prosperity and Peace.**—By James Allen. Chicago, Ill., The Science Press. Cloth, 5x7 1/2.—Some one once cruelly parodied one of Lord Tennyson's poems by another one entitled "Butter and Eggs and a Pound of Cheese." This is a "Butter and Eggs" sort of a book. Noting the title as from "Poverty to Power," etc., one can only fully appreciate the waste of it, by reading the work itself. Why are books like this written? And why, oh, why, are they ever published? It is a compendium of commonplaces and clap-trap. A good idea gone astray.

**The Directory of Directors in the City of New York, 1906.**—The Audit Company, of New York. Limp cloth 5 1/2 x 8 inches, 1,017 pages.—In over a thousand pages, together with forty pages of advertising, this very useful book looms up bulkier and more complete each year. The present volume contains over 24,000 names of directors. Each director's name is followed first, by the name of the firm or company with which he is directly associated, and then, by all the companies of which he is a director. Selected lists of corporations in banking, insurance, transportation, manufacturing and other lines of business, alphabetically arranged and accompanied in each case by the names of the company, officers and directors, are to be found in the appendix, which in itself is a comprehensive piece of work. Of the indispensableness of such a publication, there can be no possible question, and kept up to date, as it is, with each issue, it becomes a particularly valuable record of men and their affairs. Mr. John D. Rockefeller has a modest, though powerful, company to his name. Mr. John D. Jr., 4, and a University. Mr. William, of the same family, 38. Mr. Henry H. Rogers, of the "group" 22. Mr. August Belmont, of Subway fame, 27, whilst Mr. Edward J. Berwind, the anthracite king, has exactly the same number. The wonder of it is, how do they all do it? To direct a bank, a trust company, a dry dock, a large estate, with a few Copper and Steel works, besides a railroad or two, thrown in, is a pretty big job for any one. Mr. James Gordon Bennett is quoted as a director of the Commercial Cable Company only. We had an idea that he was in some way or other connected with the New York Herald. Would not the publishers increase the value of the book by inserting the dates when each of these and other men were elected to office? Supplied by the Municipal Journal and Engineer, at \$5 postpaid.

## A COMPENDIUM

Current Topics of Municipal Interest—  
Opinions on City Affairs

**To Trap Automobilists.**—The zealous sheriffs of suburban towns now have a friend which gives them legal evidence for use against speeding motorists. This able assistant is in the form of a time-recording camera. The shutters will give an exposure of one one-thousandth of a second. At the same time that a photograph is taken of the flying automobile and its occupants, a picture is made of the face of a watch, thus giving a record of the exact time the photo was made. In the use of this arrangement a trap is measured out and officers placed at each end with these cameras. The photographs of the car and its driver, with indisputable proof of the time in which he made the measured distance, may then be produced in court as competent evidence against the chauffeur.—*Technical World Magazine.*

**Affairs at Washington.**—The national capital, as planned by Washington, L'Enfant and other unnamed founders, and as described by writers, occupies but a small part of the District of Columbia. Rock Creek, flowing down a narrow valley, with precipitous banks, bounds it on the west and separates it from what was Georgetown; the eastern branch of the Potomac and the Potomac river bound it on the east and south; and a long, irregularly curved street, circling along the foot of Meridian Hill and the hills to the east of it, known for many years as "The Boundary," and now as Florida avenue, was the northern boundary of the city. Sentimental considerations should have retained this appropriate name, "The Boundary," for it marked the limits of the city as the founders planned it, and showed plainly what their successors have added.—*National Magazine.*

**Pledged Not to Bribe.**—Asbury Park, N. J., is a settlement exceedingly virtuous in intention and reasonably so in fact. A committee of fifteen of its "leading" Democrats and Republicans has been organized to prevent bribery at elections. The members of the committee have pledged themselves, their county committees, and their parties, not to use money or other consideration to influence elections; and their candidates are to be pledged to keep the laws against bribery. Pledging persons, and especially candidates, to obey the law and to be honest seems rather a queer business; and politicians' pledges are often false as dicers' oaths. Some time ago the Republican and Democratic committees at Hartford Conn., pledged themselves to be good and not to try to influence the voters at the city elections. Certainly there was much less open crooked work, but the Hartford Times intimated, if we are not mistaken, that the scene of the bargain and sale of votes was merely shifted.—*Everybody's Magazine.*

## LEGAL DIGEST—

A Summary and Notes of  
RECENT DECISIONS

## Liability for Defect in Road

**Campbell vs. Elkins.**—The liability of a municipal corporation for injuries occasioned by a latent defect in the street or roads is held to be absolute, and not dependent upon lack of diligence or care on the part of the corporation.—District Court, Wheeling, W. Va.

## Municipalities Exempted

**Hart vs. Neillsville (Wis.)**—The rule exempting municipalities from liability for consequential damages from its sewerage system is held not to apply where the system was not constructed according to any regularly and properly adopted plan.—Supreme Court, Wisconsin.

## Outfall Sewer—Damages

**Seufferle vs. Commissioners, District of Columbia.**—In proceedings by the District Commissioners, under chapter 15 of the Code, it was sought to condemn land and also a right of way through the lands of appellant and others for the purposes of an outfall sewer. The sewer, after passing through this right of way, passed under the bed of the river to the center of the channel, where the outlet will be, and there the sewage, after having passed through a strainer, will be discharged. The court below instructed the jury to consider whether under the operation of the sewer the waters of the Potomac will deposit sewage on appellant's land distant at its nearest point 1,000 feet from the outlet—which would give forth foul, poisonous odors, etc., and if they so found to consider the effect of such deposit of such sewage and of such odors on the remaining land and award damages therefor. Held, that this was the most favorable instruction to which appellant was entitled; and an instruction that, if the jury found the tides and waters of the river would hold such sewage in suspension or solution and would give forth foul odors which the air would carry over the land of appellant, depreciating the value of the land, they should award damages therefor, was properly refused. The injury complained of in the rejected instruction, being a mere consequential matter resulting from the exercise of the public right in Congress to use the bed of a navigable river, as the least injurious and inconvenient method for the discharge of the sewage of Washington, is *damnum absque injuria* and does not amount to a taking within the meaning of the provision of the Constitution. The court below properly refused an instruction to the jury to consider whether persons wishing to buy the land will be apprehensive that the operation of the sewer will damage the lands, and the effect of such apprehension on the value of the land.—Court of Appeals, District of Columbia.

## Sanitary Police Power

**Tenement House Department vs. Moesch.**—Requiring the substitution of water-closets for school sinks in tenement houses is held to be a proper exercise of the police power.—District Court, New York City.

WHO'S WHO IN  
MUNICIPAL WORK

**BARNUM, S. F.**—Mayor Adrian, Mich. Was born in Muscatine, Iowa, August 14th, 1860. Educated in the public schools of Adrian, the city he now represents, in which place he is engaged in business. The present is his second term of office. Residence, Adrian, Mich.

**CUTSHAW, W. E.**—City Engineer Richmond, Va. Was first elected to office in 1873. This is the thirty-third time he has qualified. Has been a general in the Federal Army and was formerly mayor of Petersburg, Va. Was a member of Congress from Chicago, Ill., and Postmaster there under the Cleveland administration. Residence, Richmond, Va.

**HAWKINS, S. N.**—Mayor of New Richmond, Wis., 1895-96-1906-07. Born in Ireland. Educated at the Old Academy, River Falls, Wis. At the age of 14 enlisted in the Twelfth Wisconsin Infantry. Rejected on account of youth. Then re-enlisted near the close of the war, until honorably mustered out. Studied both medicine and law, and was engaged in mercantile business in New Richmond, Wis., from 1872 to 1876. Was admitted to the Supreme Court of the State to practice law in 1874, the United States Federal Court in 1887, and before the Department of the Interior in 1886, and to the United States Supreme Court in 1900. Was in rotation elected Town Clerk, Village Attorney, City Attorney, and District Attorney. In 1899 the whole of his family was killed in the tornado which swept over the city, and his home and large library were utterly destroyed. His own lower limbs were crushed, and he was in a hospital for a considerable time. Is a writer on current events and is regarded as one of the best historians of the Northwest. Residence, New Richmond, Wis.

**MARKS, Clinton Hayes.**—Secretary of the Borough of Plymouth, Pa., since March 7th, 1904. Born May 7th, 1876, at Locust Township, Columbia County, Pa. Graduated at Bloomsburg Normal School and Literary Institute in Columbia preparatory course, June, 1899. Law student under the firm of J. Keeler, of Bloomsburg, Pa., and was admitted to Columbia Co. Bar, August, 1900. Is a practicing attorney. Residence, 103 Franklin street, Plymouth, Pa.

**MURPHY, Jerry.**—Superintendent of Police Telegraph system of Cleveland, Ohio, and President of the International Association of Municipal Electricians. Born at St. Louis, Mo., 1866, went to Cleveland, Ohio, and learned the electrical business. Appointed Superintendent of the Police Telegraph System of the city in 1887; a year ago invented a combination telephone and telegraph system, which has been adopted, and will be installed by the city. Residence, Cleveland, Ohio.

**TOWNSEND, Sylvester D., Jr.**—City Solicitor of Wilmington, Del. Admitted Nominee of Union Republican Party for to Bar in 1898. Appointed Judge, Municipal Court, 1900, and resigned in 1902. Attorney General in 1904, but resigned in favor of Robert H. Richards, nominee of Regular Republican Party, who was elected by being on both Republican tickets. Elected City Solicitor, June, 1904, for two years. Residence, Wilmington, Delaware.



## INCORPORATIONS

*When our readers desire to correspond with any of the following companies, they should address the company itself or a director, incorporator or other official or partner by name to the address (if given) under such name. This will prevent letters being marked "unknown" and returned.*

**Ajax Concrete Stone Co.,** Boston, Mass. Building materials of all kinds. Capital, \$50,000. President, A. L. Jacobs; treasurer, Frederic E. French, both of 127 Federal street; clerk, James R. Powers, 53 State street, Boston, Mass.

**American Gypsum Co.** To quarry for gypsum rock, manufacture plaster, etc. Capital, \$200,000. Incorporators: Charles L. Hunt, Harry C. Nobles, Carroll E. Bowen, Rochester, N. Y., and others.

**Cape Shore Railway,** South Portland, Me. To build an electric railway. Capital, \$36,000. Incorporators: L. M. Leighton, J. True, N. True, C. B. Dalton, Portland; E. C. Reynolds, South Portland.

**Combustion Utilities Cement Co.,** 1 Montgomery street, Jersey City, N. J. To mine, extract and remove coal, ore, stone, fire clay, shale, minerals, timber, cement, brick, etc. Capital, \$100,000. Incorporators: Fred A. Chamberlain, 60 Wall street; Patrick Egan, 15 Broad street; Paul R. Jones, 33 West 17th street, all of New York.

**The Electric Tramway Construction Co.,** Camden, N. J. To construct railways. Capital, \$500,000. Incorporators: M. Leon Berry, J. Adelbert Higgins, Wilfred B. Wolcott.

**Gas Improvement Co.** To manufacture gas. Capital, \$100,000. Incorporators: John C. McGuire and Silas B. Dutcher, 189 Montague street; William D. Davis, 61 Prentice Street, all of Brooklyn; Frank L. Camp, 20 Broad street; Lawson Purdy, 56 Pine street, both of New York.

**The Gold Car Heating and Lighting Co.,** New York City. Capital, \$3,000,000. Incorporators: Edward E. Gold, Richard V. Voges, John C. Dixon, Henry J. Horn, Lucius E. Varney, Ambrose L. O'Shay, of New York, and Edward J. Ronan, of Brooklyn.

**Martins Creek Ferry Co.,** Warren House, Brainards, N. J. To establish a ferry on the Delaware river between Harmony, N. J., and Lower Mount Bethel, Pa., etc. Capital, \$25,000. Incorporators: Harry Hatzel, Phillipsburg, N. J.; G. S. Brown, Easton, Pa.; Julius Karabinus, Samuel Hutchinson, A. C. Hutchinson, Martins Creek, Pa.; John S. Wilson, George M. Vanatta, Andrew Ralsky, George S. Strunk, Brainards, N. J.

**Metropolitan Electric Protective Co.,** New York City. Protection from burglary and theft. Capital, \$39,000. Incorporators: Simon B. Hess and Emil Goldberger, 19 West 117th street; Harry Luxenberg, 11 East 116th street; Jacob Luxenberg, 1487 Fifth avenue, all of New York.

**Missouri and Southern Railway and Power Co.,** Joplin, Mo. Capital, \$2,000. Incorporators: R. C. Rawlings and L. Rosenthal, of Chanute, Kan.; George J. Grayston and R. N. Graham.

**Perfect Gas Controller Holding Co.,** Portland. Patent rights. Capital, \$1,000,000. President, D. A. Freeman, Medfield, Mass.; treasurer, F. A. Kidder, Boston, Mass.; clerk, G. F. Noyes, Portland, Me.

**Philadelphia Electrical Equipment Co.** Capital, \$25,000. Incorporators: John A. McPeak, William F. Eldell and F. R. Hansell.

**Roebling's Employees Beneficial and Burial Society,** Kinkora, N. J. The society is to further social intercourse between its members; also to pay sick benefits to the members and to render aid and assistance in their proper burial. Incorporators: Fulop Fiher, Vendal Takhacs, John Ackely, Koraly Moyer, George Moldany, all of Kinkora.

**Spokane County Electric Co.,** Spokane, Wash. To furnish electric lights to Rockford, Fairfield and Salah.

**Syracuse Compressed Air Carpet & House Cleaning Co.,** House cleaning business. Capital, \$6,000. Incorporators: Lawrence M. Colter, Ernest W. Lawton, Frank H. Laughlin, Syracuse, N. Y.

**Worcester Stone, Brick & Tile Co.,** Worcester, Mass. Stone, brick and tiles. Capital, \$25,000. President, Ethel O. Knight, 286 Main street, Worcester, Mass.; treasurer, Stillman F. Morse, Holden, Mass.; clerk, George A. Reed, 20 Cottage street, Worcester, Mass.

## A DIRECTORY OF MUNICIPAL AND ALLIED SOCIETIES

**September 5.**  
**American Society of Civil Engineers.**—Next meeting, 220 West 57th street, New York.—Charles Warren Hunt, Secretary.

**September 6.**  
**Green County Firemen's Association.**—Convention, Hunter, N. Y.—Seth T. Cole, Secretary, Catskill, N. Y.

**September 7.**  
**Maine State Fair, Lewiston, Maine.**—Hand Engine Muster.—J. L. Lowell, Secretary.

**September 10-12.**  
**Association of American Portland Cement Manufacturers.**—Quarterly meeting, Auditorium Hotel, Chicago, Ill.—C. Earle E. Bottomley, Asst. Secretary, Land Title Building, Philadelphia, Pa.

**September 11.**  
**Empire State Tournament Association.**—State Fair Tournament, Syracuse, N. Y.—John L. Kyne, President, East Syracuse, N. Y.

**September 11.**  
**Veteran Firemen's Association.**—Hand Engine Muster, Salem, Mass.—C. W. Getchell, Secretary.

**September 12.**  
**Connecticut Valley Veteran Firemen's League.**—Hand Engine Muster, Westfield, Mass.—W. R. Hamilton, Secretary, 508 Union street, Springfield, Mass.

**September 12-14.**  
**Massachusetts State Firemen's Association.**—Convention, Worcester.—D. A. Burt, Secretary, Taunton.

**September 12-14.**  
**New England Water Works Association.**—Annual convention, Fabyan House, White Mountains.—Willard Kent, Secretary, 115 Tremont Temple, Boston, Mass.

**September 13.**  
**New York State Firemen's Association.**—Convention, Atlantic City, N. J.

**September 12-14.**  
**Massachusetts State Firemen's Association.**—Convention, Worcester, Mass.

**September 18.**  
**Farmers' and Mechanics' Association,** Westminster, Mass.—Hand Engine Muster.—A. L. Stone, Secretary.

**September 26-28.**  
**League of American Municipalities.**—Tenth annual convention, Chicago.—John MacVicar, Secretary, Des Moines, Iowa.

**September.**  
**Municipal Civil Service Commissions of all Cities in New York State.**—Under auspices of State Civil Service Commission, Albany, N. Y.

**October 1-6.**  
**Pennsylvania State Firemen's Association.**—Convention, Gettysburg, Pa.

**October 9.**  
**American Society of Municipal Improvements.**—Annual convention, Birmingham, Ala.—George W. Tillson, Secretary, Municipal Building, Brooklyn, N. Y.

**October 9.**  
**West Virginia Board of Trade,** Charleston.—R. B. Naylor, Secretary, Wheeling.

**October 9-12.**  
**International Association of Fire Engineers.**—Annual convention, Dallas, Tex.—Jas. McFall, Secretary, Roanoke, Va.

**October 15-19.**  
**American Street and Interurban Railway Association.**—Annual convention, Columbus, Ohio.—B. V. Swenson, Secretary, 30 Wall street, New York City.

**November 14-16.**  
**International Congress on Tuberculosis.**—New York City. (The principal purpose of the congress will be that of urging preventive legislation against tuberculosis, the adoption of municipal and government sanitariums and discussion of all the questions involved.)

**November 15.**  
**National Society for the Protection of Public Health and Morals.**—To be organized at Hudson Theater, New York City.

**November 20-23.**  
**Trans-Mississippi Commercial Congress.**—Seventeenth Annual Session, Kansas City, Mo.—Address Board of Trade, Kansas City.

## PATENT CLAIMS

**827,854.—Smokeless-Furnace.** Charles J. Dorrance, Chicago, Ill. Serial No. 241,567. The combination with a furnace having vertical side walls and a semi-circular top, provided with apertures therethrough of a transverse bridge-wall near the middle of the furnace and inclining downwardly on its rear side, a furnace-grate on the front side of the bridge-wall, pipes extending from the front of said furnace and opening through part of said apertures in the top above the bridge-wall and draft-regulators in the front wall adapted to deliver air to the remaining apertures in said top.

**828,420.—Fire-Alarm System.** Judson Mc-Fell, Chicago, Ill. Serial No. 272,973. In a fire-alarm system, a battery, a main circuit comprising two wires extending from opposite sides of the battery, and each normally connected at one end only with its side of the battery, a signal-receiving device, a signal-transmitting device bridged between the main wires, and means comprising a switch for connecting a point of each wire beyond the transmitting device with its side of the battery.

**828,469.—Bridge-Pier.** Charles E. Fowler, Seattle, Wash. Serial No. 300,314. In a reinforced structure of the nature specified, a structural member comprising a body or core formed of plastic composition, metallic reinforcing means consisting of bars embedded in said body with their end portions projecting therefrom, a facing formed from plastic composition and metallic reinforcing means consisting of members spaced apart and interposed between said body and the facing.

**828,515.—Clearing-Vat for Sewage.** Bruno Schmidt, Dresden, Germany. Serial No. 289,852.

In a clearing-vat for sewage or the like, the combination of the vat proper, inlet and outlet openings, and a plurality of downwardly-curved deflector-plates in front of the inlet-opening, extending across the entire width of the vat, and each plate extending below somewhat lower than the next higher one, for the purpose of breaking up the liquid into a number of wide, thin bands entering the vat proper at different depths, and thereby reducing the velocity of the entering liquid, substantially as set forth.

**828,550.—Cement and Concrete Binder.** Chas. T. Inman and Henry A. Robinson, Akron, Ohio. Serial No. 267,034.

A device of the class described comprising a strip of material formed in a continuous length, provided in one face at a point removed from the side edges thereof with a series of depressions of the same contour, and on its reverse side with a series of projections corresponding in contour to the depressions of the opposite face, whereby when one strip is connected to another strip the projections of one strip will interlock with the depressions of the other strip.

**828,572.—Snow and Ice Removing Apparatus.** Joseph F. E. Rose, Montreal, Canada. Serial No. 281,925.

In a device of the character described, a wheeled supporting-car, comprising two sections, means connecting said sections, a snow-plow, and a plurality of ice-cutting members carried by one section, and means for actuating the snow-plow and ice-cutting members.

**828,597.—Fire-Hydrant.** Alfred A. Cowles, New York, N. Y. Serial No. 262,141.

The combination with a fire-hydrant of means for forcing the water therein to a level below that at which freezing will occur, and means for maintaining the water at such level as long as desired.

**828,643.—Method of and Agent for Laying Dust.** Clinton E. Dolbear, Long Beach, Cal., assignor of one-half to George N. Phelps, Boston, Mass. Serial No. 257,543. The herein-described method of rendering roadways dustless, which consists in applying thereto a hygroscopic agent in hygro-metric balance with atmospheric moisture.

**828,719.—Mold for Concrete-Roof Structures.** John J. Daniel, Cambria, Wis. Serial No. 308,631.

A cement-roofing mold comprising an arched backing adapted to be fitted between roof-joints, end fillers for the arched backing, supporting-struts for said arched backing, and means in connection with said struts for adjustably securing the same to the roof-joints.

**828,734.—Means for Removing Asphalt Paving.** John Gammie, New York, N. Y. Serial No. 288,700.

In asphalt-cutting apparatus, the combination of a rotatable saw-shaft carrying a plurality of saws and mounted for free movement vertically upward, but restricted as to downward movement, and a plow arranged to detach and raise the asphalt between the lines prescribed by the saws for the purpose described.

## OIL ENGINES FOR PUMPING

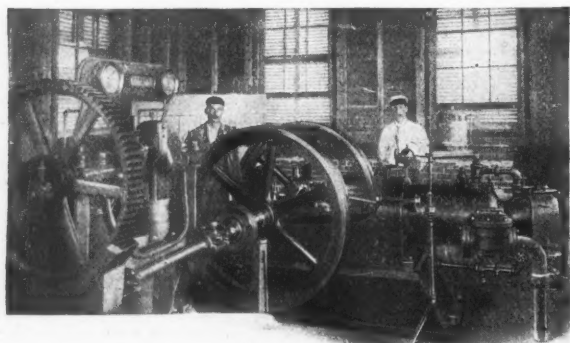
### Economy in Operation a Feature—Comparison of Cost with Different Installations and Fuel—Municipal and Private Plants

KEEN competition has forced manufacturers to carefully consider all possible means of reducing expenses, and in municipal no less than private plants economy must be considered. The gas and oil engines which are rapidly coming in favor offer a simple means of lowering the fuel bill, which in all plants requiring power is a very important item. A number of interesting installations using internal-combustion engines, for supplying water to towns, have recently been made in the New England States. Even if there were no economy obtained by using this type of engine, the absence of a boiler plant alone would be sufficient to justify their use in many cases.

In the pumping station at Scituate, Mass., a 16-horsepower oil engine of a type known as "Hornsby-Akroyd" is used, direct connected to a triplex pump.

One of the first installations of this kind to be made was that of a 13-horsepower engine, direct connected to pump, at Cohasset, Mass. This plant has been in operation for several years, and, according to the statement of the Superintendent, is started up in the morning, the door locked, and the plant left to run all day without any attention whatever. The figures of comparison between the cost of operation of a steam engine and an oil engine plant, presented in the next column, will convey some idea of the economy to be effected by the use of the latter.

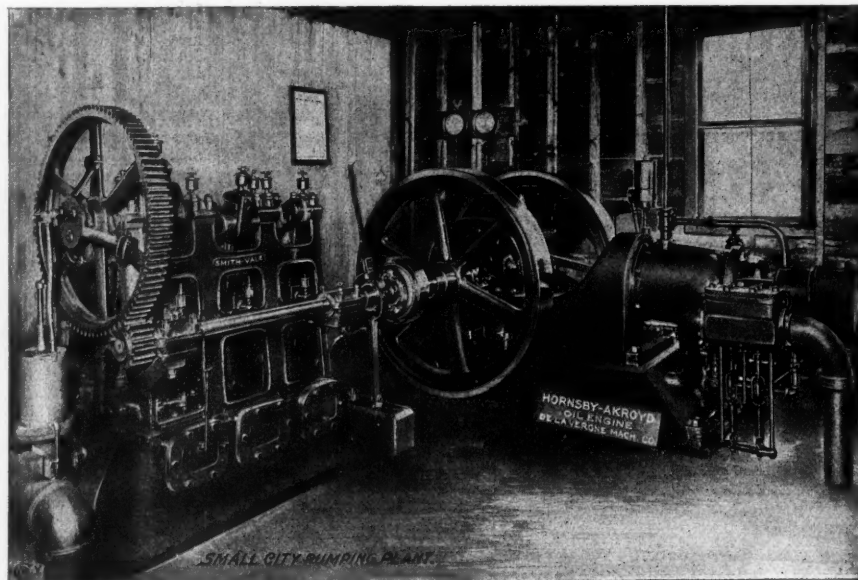
Reports received from the many installations tell of the successful operation of the engines, and many of them set forth that there was practically "no expense for repairs."



SUCCESSFUL PLANT AT COHASSET, MASS.

These statements come from superintendents of waterworks and representatives of private concerns.

The portable pump, which is used largely by the Department of Sewers of the city of New York, has given much satisfaction. It is frequently employed by contractors in building foundations and similar work where it is necessary to operate a pumping plant for only a short time and in cases of emergency. The outfit consists of an oil engine belted to centrifugal pump, rigidly attached to



OIL ENGINE IN PUMPING STATION AT SCITUATE, MASS.

steel portable frame, and has proved serviceable where an elevation not exceeding fifty feet is required.

#### RELATIVE COST OF POWER USING DIFFERENT ENGINES AND FUELS

Basis for Calculations: 300 10-hour working days per year. Coal at \$3.00 per 2,000 lbs., or 0.15 cent per lb. Crude oil at 3.5 cents per gallon of 7.5 lbs., or 0.42-3 cents per lb. Table taken from "Oil Engines."—A. H. Goldingham.

Brake Horsepower..	50		100		200	
	Steam Auto-matic non-Condensing	Oil Engine	Steam Auto-matic non-Condensing	Oil Engine	Steam Compound Condensing	Oil Engine
Type of Engine Used						
Cost of plant complete, with machinery, foundations, building and land, per B. H. P.....\$	160	135	145	120	120	102
Fixed charges 16% per B. H. P.....	25.60	21.60	23.20	19.20	19.20	16.32
Fuel per B. H. P. per hour.....	7 lbs.coal 1.05 cents	0.9 lb. 0.42	6 lbs.coal 0.90	0.9 lb. 0.42	4 lbs.coal 0.60	0.9 lb. 0.42
Fuel per B. H. P. per year.....	21,000 lbs. \$ 31.50	2,700 lbs. 12.60	18,000 lbs. 27.00	2,700 lbs. 12.60	12,000 lbs. 18.00	2,700 lbs. 12.60
Cost of attendance per B. H. P. per year.....\$	18.00	5.00	10.00	5.00	10.50	5.00
Cost of 1 B. H. P. per year.....\$	77.80	42.70	62.60	40.10	49.70	36.92
Per hour.....cents	2.593	1.423	2.087	1.337	1.643	1.231
Net saving each year (additional to fixed charges) in the other plants over steam.....\$		1755.		225.		215.